```
caaagagaaa aggcgtgtag atggtatgcc tggcacacga tctacacgcc ccggagttat      60
tcgcttctga gatcgtcgag tacttcgtcg tacttgtccc gatctcttcc accatatctt     120
cggtgattcc cttcattttc ctacggtctt ctggtagcga ttcttggctt cataatagcc     180
ttccaccacg ctatccttac tttgtcggct gtactgttga tgtcttcaac gaagcgagta     240
cgctttcacg atcagcgaaa taagcagcgg tagcccnaat agcaaggccc actacagacc     300
gagagaaaac tttccttgtg agctcataaa aaatcctcct tacttattaa atgctttgaa     360
tcaattttgt cagaaaacca attcacncga atatgaatcg tttcgt                     406
```

(2) INFORMATION FOR SEQ ID NO:311

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 664 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...664

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:311

```
agcagattat gccatcacgg cctctcactc ggagggtttc ggtctgaata tctggaggct      60
actgcttgtg gaaaacccgt tgtagccact gatttgcccc attcagagaa atctgcggca     120
caggctttca ggacaacgaa ttgttttttc tgtaggaaac caaaaagaat tggaggattg     180
catactaaaa agccttgtca tacgttcaac cctcaaaaag tctccgatat caggcatcat     240
ttctcgcgga aacaatgtct gtacaatatc agaactatta tacggagcta tcagtccact     300
aaaatgaatt caatgaagag tgcatgttcc gattattact gctcaatcgt actttataaa     360
agcaaaccgg atattattcg ggatgtcatt actccttttt ctctgatacg gtaactaaga     420
agaagcttat cctcatagac attctccgac tgacagtctt cgtgtcctcc aagaagaaag     480
accggaggat ttcaggtatt tctttaataa ccgcaatata ggattcggat cagctcacat     540
atcggtatta gagaggcagc tcgcttcaat ccttcttatc attaattcta atcctgatgt     600
gcagtttggc cctgaagtgg tgccgacatt ggcttcaaca tggaccgaga atcctgatat     660
agga                                                                   664
```

(2) INFORMATION FOR SEQ ID NO:312

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 969 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

```
(ix) FEATURE:
     (A) NAME/KEY: misc_feature
     (B) LOCATION 1...969

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:312

gggtaacgac agcattcttc accggatcga tcatttgggc aatagcctgt tgaatgcttc      60
cagaggaacc tgaggagcaa aagcattcac cgtctgattt ccacctcaat acccgggata     120
tagccgccat cggtgaagta ggtggagatt cattggcata agcattgttc ttacgcttgt     180
ctctttcgtt gtattgttct cgtatcgctt gagcacattc gngccgtgca cgatccgtat     240
tcgccttggt gaataccgaa ctgacggagg ctttctatct ctgccaccaa tgcgtcatcg     300
ctttctccgc ttcaccctca cgaaccgagg caacaaaatt gaagcgtcct tagtctgggt     360
gatgtacatg aagttagaga agaaagctcc tgactgagga aaggagcgtt aggcttgtga     420
gtaatctcgg acagacgctc atcacggctg tagtgatcac ctgtttcata tagtcttcca     480
caagtccgaa atcgatcctc gcacttcttg aggagtgggg tcgctcttga agctgatggg     540
agctgcgtgg tagtagcctc agcatcggta gcaatggcta cgataggcca tcgttgtcct     600
ctaccggcgt atagatacgc tctgctggat tcacggggca ggaacgtcct tgaagagttc     660
tttgatcttg ttctccacat agtccaatcg atatctccca cgatcaccag accttgcagg     720
tcgggacgat accattctta taatagttgc gcagctcatc atgcttgaag ttgagcacga     780
cgtcatcaga ccgatgggca tgcgttctgc atatttatta cccggcatag cctggcaagt     840
atagcctcga acatacgaag gttggcatcg cgacgagcac gcactcttcc tggatcacac     900
cgcgctcctc gtcgatctca tgcccgtcga ggtaatattg ttactccaat catgcaggat     960
aagcaagcg                                                            969


(2) INFORMATION FOR SEQ ID NO:313

     (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 613 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...613

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:313

tggttcgctg ccccaagtcg ttgtacgatc gtcttcgcga agaggatagg cgcgtttccg      60
agtacccgtc gatattctgt ccgatgagga cgatacggcg gtacggaaga agaccccttc     120
aaaaacacgc tggtcaggca tcaggatgct tcccctactt cgccttgcga tacttcgatc     180
tgaagaaagt cttcactccc tccgcttcca tatagatttg ggcacctacc acttcgccat     240
atacagaaga acatcggcga gcagccggaa gaccgccatc tgacgcgcaa cctgacggct     300
tcggccgaat acaggatttc gccgaggagc atagacccga agatggaagc gtttggtgcg     360
ggatttggac tacttcgaga ccggcgacaa gcctatatca cccaaaccac tccgcactat     420
catatcgaga aaggaaagat cggctgaggt tcgtgccgga agggcagctt ctttggccgt     480
cgccggaggt ggagcaaccc gaacgggacg aaagcaaata cgcccaagac aaacggttcc     540
ggcagaagcc ttcctgagcg tacatgagct gatgcccatg atgtctatac ttcctgctga     600
gagaaaagta ttt                                                       613
```

(2) INFORMATION FOR SEQ ID NO:314

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1630 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1630

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:314

```
gcatcagtag tatgagcgaa aggtattgat ttcagtgttt ttcaggttgt agctccgtcg      60
ggaatcgaac ccgaatctat ggtttaggaa accactatct atccattgaa ctacagagcc     120
gaaagaacaa gaccgacctt gatcggtttg tctctttta tttcggggac aaagataggg      180
aataaaccaa cttaatttgt tccttttctt tcttgagcaa gcgttcggcc gcttcagatg     240
ttgcttctgt cgatagtatt cctgactata accggggaaa tcaggcatgg cactaaaccg     300
tatccatttg tcttgaatcg gccactctcc tctttcttgc gatgccatcc atgtacttta     360
ccatcagata ttccccaaga cgcttccaac ggcagttgct ttctctgcct cttcgttgct     420
gtaatttgtc aggaatgcta cgctttggcc ggatccagag cgtatagctc ttgtgcttgc     480
ttgtcgatag cggaagtatg cggtcacaag ctccttcgag ttcacgctgt acagggcgat     540
atcggctatc atctgatcat agcggtgata tgccatatta gccacccatt gtggatccag     600
aaagccgaag tccaagaaaa gtgcatcata tcgccatacc ctgacggaag cactccggca     660
cacgcgttgt ggaacaatag atcggatcat aacggccata tcggcatcgt ccacgccaaa     720
ccaattaaca ccgccatggc atcggggagc caattacgca actgggctac gaaaacaaat     780
ccggttgctg agtggcaatg gcacgttcat taacgtactc cttgccatcc actcgaagct     840
catcggacgc caacggtagg gtactttata agggccggca ccggatcgtt cgtcatacat     900
agggaagtac cttcgtagtg atcacgcatc aatcgcgaac atcagcgaca gagagcttgc     960
gatccggaac aatatagaga gcattttatc cttgctctga ttccgtataa aagcttcata    1020
cttacccatt gcgaattgaa cttattgaag aaagcccata cacgagcttc acaaccacaa    1080
gaccaccttc ggtataaggg ttatatgctt cttggaagct aaaatcctgt ctgttccttg    1140
gaagaatccc atctcacggg caaatgaaac gacatcggag aatagagata atctttactc    1200
ttgaaatcga tctgctggat gcgagttgat tggcatgtgc actaatagca ttgtccggaa    1260
tgcgcacagc tgccacacag cacctttgcg ccccttaccc ttgccgatca tctccagaat    1320
ccaacttcgt tcttatcggc aacactaaaa ctttcgccac tgctatggta gcgtattcct    1380
ttaccagatt ggttatgacg tctatagcct cacgagctgt ctagaacgct ggagagccac    1440
atagatcagg ctgccatagt ccatgatacc tcactttcgg ccaattcggg acgtccgccc    1500
catgtcgtct cggcaatagc acttggtgtt cgttcacatt accgatgaca ttgtaggtat    1560
gcgtatgtcg ggaatgaatc caagtggttt gttcgtgtcc cattcgataa ttgggcgatt    1620
gttccttcag                                                            1630
```

(2) INFORMATION FOR SEQ ID NO:315

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 459 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

```
  (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: UNKNOWN

  (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

  (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...459

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:315

cactgttttt ggcattgcgg atgggatcat ggatgtcgat aggttcgtgc agatattgta     60
gtcaccgcac aggatcaagt tagggcgact cttgcggatt cattgacata agattggaag    120
tgctccagcc aaaccatctt gaaggccgac gctcatcgcc actcgtccrg gatggatgat    180
aaacgcttac gatagaagat cgccgaaatc ggcacggata aaacgacctt ccgcatcgta    240
ttcttcatac ccatgccata ttctatatga tcaggctgat gctttgtgat gataccacac    300
cgctatatcc tttcttttga gcccgaaaaa aagatacgag ccgtagccca gtgcttcaaa    360
tccttcattt ttcgaattgg tcattctgca tctagtttcc tgcaggcaca agcacatcag    420
gattctcttc tcgaagccaa cgatcagatc ttttcttca                          459


(2) INFORMATION FOR SEQ ID NO:316

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1400 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: UNKNOWN

  (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

  (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...1400

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:316

ggcaactata tgatcgattt gttgttagct aatgtttgta agcaaaatac acccgccttc     60
cttatgaaat agctcgtttg gcagaagata ttgcaggagt ttgatggtaa ccatgccttc    120
tcaacaagac ttccgccatc cggaaatggc ccgatcgtaa agaaatatct tgcaggtgca    180
acaggcaaat cgacagaaac cgtatgcgtg ttctgcgttt gatagagaat atcacgctgg    240
gaacactgcc gtcggttatc gaaccgagtc tatgcacgga gccggatctc ctcagctcag    300
agaatcatga tcgctcgtca gggagatctt gagggcaaga aaagcttgca cgggcgattg    360
ctcatatcga cgaatcactc gataagtaat cgctctcctt cacttatctg tttgatgtat    420
ttagaagacg gattataacg caccgtgaaa ccggatacaa tgacagaaga aatagtcgaa    480
ctcgtactgc cgagcggatc agtccgctac tgcgcagtca cggggcgac ttatctttac     540
tcaaatcaag gataagaccg tttttgtgcg gttttccgga gcatgccgtt ctgtccggca    600
gcacatgaga cagtagaaaa aatcgttcaa gccatgaacg cgaatacttc aaagatgaca    660
acatcgatgt cattcttgaa aatagtttag cgatgatctg ttagaacaag ccaagaatat    720
tttgagaaaa cccaatagct tttatgaaag acgtattagc ggaatatgcc tcccgaattg    780
tttcgccgaa gaagccgtaa aacatatcaa aaatggagaa cgggtagctt tgtacatgct    840
gccggagttc ctcagagttg tgttgatgca ctggtacaac agccgacctt ttccagaatg    900
```

```
tcgaaattta tcacatgctt tgtctcggcg aggaaaatat atggcacctg aaatggcccc    960
tcacttccga cacataacca ttttgtaggt ggtaattctc gtaaagcagt tgaggaaaat   1020
agagccgact cattccggta ttctttttatg aagtgccatc aatgattcgc aaagacatct   1080
tcacatagat gtcgccatcg ttcagctttc aatgcctgat gagaatgtta ctgtagtttt   1140
ggagtatctt gcgattatag caaaccggca gcagaagcgc tcatttagtt ataggggaaa   1200
tcaaccgtca aatgccatat gtacaggcga caacttgatt cacatatcga agttggatta   1260
catcgtgatg gcagctaccc tatctattct cttgcaaagc ccaaaatcgg agaagtagaa   1320
gaactatcgg gcgtaattgt gccgagctta ttgaagatgg tgccacactc cactcggtat   1380
cggcgcgatt cctgatgcag                                                1400
```

(2) INFORMATION FOR SEQ ID NO:317

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 628 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...628

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:317

```
gtgaatagac tcacgattgt cctcggcata agcatagcca gagcaaaacg agaaagctga     60
ccagtagatt gacgccacaa ctgtagcgat aggccgactc acccgtcccg gattttttagc   120
cccgtagttg aaacctacga tcggctgatc ccctgagcca caccgatgat aatcatgaaa   180
aagagcatgg catagcattg ataatcccga atgctccgat ggccaagtcg gtagcatctg   240
ctgtccgccg taggatacga aagaacgatt catgatgata ttgaccagac tgccgtaagg   300
tgcatggcga agggtgctac ccctatagcc gttatgccgc cgacaccggc agggacaggc   360
ggaaagccga gcggtggaaa cgtacgatac tgccttacgg aaaaagtgcg aaaggacgta   420
gaccgaacat actatcatgg aacgacagtc gctatggcgg ctccgcttat ccccatcccc   480
aacggataga gaagatgtag tccagcacca cgttcgtcat agccccgatg atcatcgtat   540
catggctttg cgcggatagc ccgaaagctc tcatgatagc attgtagcga agcttcagag   600
ctgagaaaat attggcagga ccacgtat                                       628
```

(2) INFORMATION FOR SEQ ID NO:318

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1372 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1372

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:318

```
tgcttcttcg agacagtccg aatgagtccg atccacaccg aaatcattgt gaatatgagc     60
gtattcttcg tgatgtcgtc cacgctcgtt cgttcgtgtc gctggtagga gtggcgaaag    120
caccgttctc gtcgcgatag acaggcagcc ttcgatattc aattcgccac gtccgattcc    180
gacaaaaggt tcgtctcata tcccacgccg aatacaatgt cggagcctac cttatcacgg    240
tcgaaacccc gatagagtac cctgtacgaa gagataaaag gttgcctatg tccacaaagc    300
attgatataa taaagcccca atccgcgtac tacacgtcgg gacactgctc ggcagacggc    360
ctgtagcggt taggatcctt gccggtacgt tttagcagct gcgtgtggct gctatggcag    420
ggatttcttt gatggccggg agtcgcaagt ctgtatcagc cgatcaagcc tctccgttca    480
tctcatctat agagtggatg gcgaccggcc tgctgcaact ttggccgtac cactcctacc    540
gaaaagccgg acaatgatgc agaataggta cgtcaaagct gatcccgggc atcgtctcct    600
tcgtatcgta ttcgatctcc aaatcaaaat caatgtctcg agaccttctt catcctcgtc    660
gtcttctatc gatgccggaa caaatctcct cctcatccca tgtaagactg gtcaaatcaa    720
gagcttggcg tactagctgt ccggctcgtg aagggtctcc ttgctgagtt ctttccacaa    780
gtatctttag ctcttccagt ccctgttgtg ccacggcaga aatgaaaact acgggcaagc    840
ctgtcggcag ctcctcccga agcatctcgc acagctcttt cgcgatgagg tcgcacttgg    900
ttatggccag cactttgcgc ttttgtgcca atcttcgttg tatgccacca gctcccgact    960
gagtatctcg tattccttgg aatgttgtcc gtatcggccg gaatcatgaa gaggagcaaa   1020
gcgttccttc gatgtgccgc aggaaacgca gtcccagtcc tttcccccgat gaagcccctc   1080
gatgatgccc gggatgtccg ccattacaaa ggatcgcttg tctcgatggc tacgataccg   1140
agattaggtt ccagcgtagt gaacggatag ttggcgtctt cggctttgca gcagtgagca   1200
ctgatagcag tgtcgatttg ccggcttggg aaatccgacc agaccgacat cggccagcat   1260
cttgagctgc atgacaccat acgctcctgt gccggctcgc cgggctgagc atatcggggg   1320
gccgattggt agcggtcttg aagaacgtat tgccgtgtcc gcctcggcct cc           1372
```


(2) INFORMATION FOR SEQ ID NO:319

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 480 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...480

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:319

```
ttgcagtgat gggtccgagc ggagctgtag aagtaatttt tgccaaagag tggcagcagc     60
cgagaatcct caacaagcag cattggaaaa ggaagaagat atcgtcaggc ttttgccaat    120
ccgtacaatg cagcctctta cggctactgg atgatgtgat cgagcctcgc aatactcgtt    180
tccgcattat tcgtgccttg aacagcttcg tacgaaaaag caaactattc cggctaagaa    240
acacgcaatg tgcctcttta ataagaggag tttagtgcat cgaccatgaa tattgcaggt    300
ttagccatat ccttctgact ttgtttgtca tagcctccgg atactctttg cccagcaggc    360
```

```
agcacagctt cgcttgaatg aagtgatgac ccgaatgtgc gngactatca ggacagctat        420
ggcaatcata agccgtggat taaaatatac aatcctccan ccgctacggt ggatatcaaa
480
```

(2) INFORMATION FOR SEQ ID NO:320

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 444 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...444

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:320

```
ctggaattgg ttttactgag gaaaataaga attcttttga tacatacaga gtggcttcaa         60
aatgtcaaaa ggaggtaaag gcttcggtcg atttatgtcc taaaatactt ttatcatgtc        120
tcaattgaaa gtatcttcta tgaagaggca aatataaaca acgtagtttt acatttggtc        180
acgcagatga gataatgaaa atgagcaaat tgtagatatt gaatccgact ctgacctgca        240
tacagtacag ttttacatct ttcttccatt aagtcttttg atttagataa agggttgaag        300
ttattgccag aaaactcgtg gagcgtttac ttgtattctt tgtcctggag gggaatatac        360
tccaaagatt acgattaaag aagagaatgg ctcaattcaa tagtattgaa taactatatt        420
ggagacaatt ctgatattca aaaa                                               ·444
```

(2) INFORMATION FOR SEQ ID NO:321

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 456 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...456

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:321

```
tgcaaaaata tcctttaccg gctaaaactc agataaaatg tgtttttcat gcaaggatat         60
```

```
gcgccactga cctgtcgaaa agagcgtgac aactactcaa attgaacgta agcataatca      120
ttcgggtgcg tgcccgactg atagactggt atagatcaac ttataatcat ccaaaagatc      180
aggacgctcg tgtgtgtaac atcgggaaaa ccaaagctaa agcgcagttc ggggcacaat      240
ttgaaaaagg caggtaaaaa tcgcatccga gaccgatctg caccccgtaa tcgtcgcttt      300
ggtataaatc tccaacccct tctttcgccc cagctccata gtcagtaagg cccgccgatg      360
aggtattgga cgcataattg gttcaagcgc cggaaccata ttttcaataa ttagcggaaa      420
ttccaaatat ttggatccga acggagaaaa gaaggc                                456
```

(2) INFORMATION FOR SEQ ID NO:322

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 474 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...474

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:322

```
ggcttgcgtg tggatgagtt cgggactgaa ccacatacgg ctctcttttt cgtggacagt       60
gtgcggtgtt caaggaaatg cagaaaggca ggtatttctc cttcaccctt tgcaggaaat      120
ccgtgtcgtc cctctctatc ctccctattt tcttacccaa tagcgcgtct cccctgcgtc      180
gatgatgacg ggcaggttc gttgttggag catagtacaa acttggcaaa gaacgaaatc       240
tcgtcctgtc cttatcctcc gcctccacct tgtaggaaag ggtggtgctg aggtcttgag      300
ccgctcgctg tcctccctgc ggtcgagaag cacctngtcc acgggatgag cagtttccca      360
gcctagtccg agttgaactg acttcgaaag tctcgttggt gttgaaggtt acattgctgc      420
ccaagagggc tttgaggaaa gttgagaaat tgtgctnttg cccgtgtttc gctn           474
```

(2) INFORMATION FOR SEQ ID NO:323

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 476 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...476

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:323

```
ggctgcgaat agcttgtaaa tacgattgat ctcaacacct gcagctttta ctcatttaaa      60
tactggacgg ggtttcata cttcttaaat gcattggtag tgatacctgt gtcaatcgga      120
ctgttttcaa atctgtggca ttcataatgg acgtgcagat acactgactg taaaatgacc      180
ggctttttct gtgctattgt cctgctttc tttactgaca tagctatttg ggcaaaaact      240
tcacgttttt cttattaata aaatactggt ataaatctat atcaggaata cgagtgcagc      300
agatttcaat tgtaacgact cttttaccat cttgatcatg ttatgacctc tttgacatac      360
tggttggcag cgttaccttc caaatatagt tcatcaagtc tttcaagagt gcttttagtg      420
aaatttcgga caaaatgctt atgatgaatc tttttgtaga gttgcgattc taataa        476
```


(2) INFORMATION FOR SEQ ID NO:324

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 1506 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1506

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:324

```
aaggatcggc agccggttcg acggtagctt actgtttggg natccggatt cgatccgatc      60
aagtaccatt tgcttttcga gcgtttctc aatccggacg tatctccatg cccgatatag      120
acgtcgactt cgatgatgac gggcgtgcga aatactccgc tgggtgacgg aaaaatacgg      180
caaggagaga gtggccacat catcacctac ggtacgatgg ccacaaagag ttctattaag      240
gatgtgctcg cgtacagagg ctgcccttac tcgaaagcaa tcgtttagcc aagccgacca      300
gacaaaattc ccggagagaa gaaagtcaat ctgaagaaag caacgaattt gttccagagc      360
tgaagcaagc atcgctaagc tccgataagg tatgcgcgat accctgaaat acgcccaaat      420
gctggagggg aatgtgcgca aacaggtgtg catgcctgcg gtatcatcat tgggaaaacg      480
gatatcagcg tgtcgttccg gtcagtacgg ctcccgacaa agacacgaag gaggagctgt      540
ggtcacacaa tacgaaggct ctgtcatcga acagacggga ctgatcaaat ggacttcctc      600
gggctgaaaa cgctctcgat catcaaagaa gctttggcaa cataaagcgg cgccatggca      660
ttgacttgaa tatagacacg atcccttcga cgatcctctt acatataagc tatacagcga      720
tggacgtacc ataggacttt ccaattcgaa tccggtggga tgcaaaagta tcttagggag      780
ctacgccctc tgctttcgag gacttgatag cgatgaatgc tctctatcgt cccgtccgat      840
ggactatatc ccttctttta tcgcacgcaa gcatgggcgt gacctatcga ttacgacctg      900
cctgagatgg aagaatatct caaagaaact ttggtgtgac ggtgtatcag gagcaagtca      960
tgcttctgag tcgcaagctt ccggttttac ccgaggccag agcgatgagc ttcgtaaggc      1020
tatgggcaaa aactcatcga aaagatgaat gttctgaagg tgaagtttct cgagggggga      1080
ataagaatgg acatccggaa gaagttctgg aaaagatctg gacagacggg agaagttcgc      1140
cagctatgct ttcaacaaga gtcatgccac ctgctaagtt gggtagccta ccaaacggct      1200
tacctgaaag caaacttatc ctgctaatat atggcaggag cattgagccg aaacctgaat      1260
aacatcacgg aaataccaag ctcatggatg agtgcaagtc catgaagatc ggcgtattgg      1320
tacggatgtg aacgagtccg aaatgaaatt ctcagtaaat gccaatgggg atttcggttc      1380
ggtctcagcg ctgtaaaggg tgtaggatcg ggagccgtgg acagatcatt gccgaacgcg      1440
aagccaacgg gctatataag gacatcttcg ctttgtggag cggatcaatc tctctgcctg      1500
caatcg                                                                1506
```

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 588 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...588

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:326

```
ggcgtaaaaa tcgttataga accacttacc acttcaatga caatacggaa aggcatcccg        60
cctgatacga tcatatacgg tggaacatgg catggctttt ttgacctctc tgcggctatg       120
gggggagagg ctgaaacccg acaatggtgc gtagcgggct gatgcatacc gatcatatac       180
attatacggt gggtggtata cccgtcatgg aggactggtg gccgatgcct tactcggctc       240
tattgccgtg gcaaaatgga taggagcgac cagtccaaac tctaaaataa aagaagtcca       300
agatcgtgca ctttttcgat tcgatggata tatcccgcct gtggatatat tacagtatga       360
tgcttctgcc cccatgattt tttcgagtgg gagttcttca tcctcttttct tttgttcctt       420
ccgctataca tcctgctacg cggcaaaccg gactgcgtat tgtatacgta tctctctttt       480
ctctttattt tactataaga gcagcggtct tttcgtcctg cttcttttgg ctgctgctag       540
agcgacttcc tcatcggtcg gcttttttgtc ccgtcagcag atccaagt                   588
```

(2) INFORMATION FOR SEQ ID NO:327

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1014 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1014

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:327

```
gcgctctcga cggttcttcg ctgtgatcga gagcaccgag aggcggtcac gacactctcg        60
atggcccgct caatggctcg cacagtgtct atcgcctcgt gaagataacg agtttctgct       120
ctggattacg ctccagactg agcagacagg tagcagctgt cgcttaaaat cgtctagttt       180
gggatcgtcg gagtagtgct ccactgctca tctagctggt cgatgagggc tagatcctga       240
cggagagatc aatgtattct ggagcaaagt cctcacgtcg atactctcta tttcccccttt       300
ctcattcgat ccagaggagt tgagcttgtt gatcttttttg cgtgatcctc ggcacactct       360
```

(i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 588 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...588

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:326

ggcgtaaaaa tcgttataga accacttacc acttcaatga caatacggaa aggcatcccg   60
cctgatacga tcatatacgg tggaacatgg catggctttt ttgacctctc tgcggctatg   120
gggggagagg ctgaaacccg acaatggtgc gtagcgggct gatgcatacc gatcatatac   180
attatacggt gggtggtata cccgtcatgg aggactggtg gccgatgcct tactcggctc   240
tattgccgtg gcaaaatgga taggagcgac cagtccaaac tctaaaataa aagaagtcca   300
agatcgtgca cttttcgat tcgatggata tatcccgcct gtggatatat tacagtatga   360
tgcttctgcc cccatgattt tttcgagtgg gagttcttca tcctctttct tttgttcctt   420
ccgctataca tcctgctacg cggcaaaccg gactgcgtat tgtatacgta tctctctttt   480
ctctttattt tactataaga gcagcggtct tttcgtcctg cttcttttgg ctgctgctag   540
agcgacttcc tcatcggtcg gctttttgtc ccgtcagcag atccaagt   588

 (2) INFORMATION FOR SEQ ID NO:327

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1014 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1014

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:327

gcgctctcga cggttcttcg ctgtgatcga gagcaccgag aggcggtcac gacactctcg   60
atggcccgct caatggctcg cacagtgtct atcgcctcgt gaagataacg agtttctgct   120
ctggattacg ctccagactg agcagacagg tagcagctgt cgcttaaaat cgtctagttt   180
gggatcgtcg gagtagtgct ccactgctca tctagctggt cgatgagggc tagatcctga   240
cggagagatc aatgtattct ggagcaaagt cctcacgtcg atactctcta tttccccttt   300
ctcattcgat ccagaggagt tgagcttgtt gatcttttg cgtgatcctc ggcacactct   360

```
    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...408


   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:329

ggtcgaagct cgtagccact gctacatgct tggcctgatt caaatcgcta acggcacttc      60
ttccggaata accaacacag gtaccttgct cgaatctata cttcggctgc aacgcttccg     120
atcagatccg aatccttgcg cgatttgctc gcgtccccat cacgatcatt acgggtctgt     180
gtcgcttgca gtaactagga ttacatcttc cggagcaccg tccaaaagga cagaggagaa     240
agatattcgg gaagttcctc tcgcgttatc ctttcacgca gctctttctt gagctgttca     300
tcagacgttg tacacgctgg tattctttgc gcaggctgac ttcttgctga gctggaacac     360
aagccgtatc gcccaccgta agaaggtgtg gaaaaaatgg actgatat                  408


(2) INFORMATION FOR SEQ ID NO:330


    (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 507 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular


   (ii) MOLECULE TYPE: DNA (genomic)


  (iii) HYPOTHETICAL: NO


   (iv) ANTI-SENSE: UNKNOWN


   (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS


    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...507


   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:330

atattggatg tgcccgtgaa agatgagaaa gctgcctgct ggcatgtctt tccatcatca      60
cggacatgta tcagcccaat ccacagcgaa tgaaggacgg atctccatcc ccaaaagcaa     120
cggttatgag tcgctccacg ttacggtatg ggaccgcaga atcggtgggt ggaggtgcag     180
attcgctccc gtcgcaggac gaggtggccg aaagaggatt ggctgctcac tggaagtaca     240
aaggttcaag agcgagagcg gattggatga gttcctcact tccgtacgcg agaccttgag     300
gcacgcgatc actcctcgga cgattcggcg gagacggtga aaacttcaag atgaacctct     360
tcaccgatga gatctatgct ttcactccca cggagaactg atcaagttgc ctcagggagc     420
ccagtgtgct ggactttttgc ttttgcccat ccattngcgc atcggctgtc aggccgtcgg     480
agcttaatgt aatggaaaga atgtgcc                                          507


(2) INFORMATION FOR SEQ ID NO:331


    (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 966 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular


   (ii) MOLECULE TYPE: DNA (genomic)


  (iii) HYPOTHETICAL: NO


   (iv) ANTI-SENSE: UNKNOWN
```

(ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...408

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:329

```
ggtcgaagct cgtagccact gctacatgct tggcctgatt caaatcgcta acggcacttc      60
ttccggaata accaacacag gtaccttgct cgaatctata cttcggctgc aacgcttccg     120
atcagatccg aatccttgcg cgatttgctc gcgtccccat cacgatcatt acgggtctgt     180
gtcgcttgca gtaactagga ttacatcttc cggagcaccg tccaaaagga cagaggagaa     240
agatattcgg gaagttcctc tcgcgttatc ctttcacgca gctctttctt gagctgttca     300
tcagacgttg tacacgctgg tattctttgc gcaggctgac ttcttgctga gctggaacac     360
aagccgtatc gcccaccgta agaaggtgtg gaaaaaatgg actgatat               408
```


(2) INFORMATION FOR SEQ ID NO:330

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 507 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...507

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:330

```
atattggatg tgcccgtgaa agatgagaaa gctgcctgct ggcatgtctt tccatcatca      60
cggacatgta tcagcccaat ccacagcgaa tgaaggacgg atctccatcc ccaaaagcaa     120
cggttatgag tcgctccacg ttacggtatg ggaccgcaga atcggtgggt ggaggtgcag     180
attcgctccc gtcgcaggac gaggtggccg aaagaggatt ggctgctcac tggaagtaca     240
aaggttcaag agcgagagcg gattggatga gttcctcact tccgtacgcg agaccttgag     300
gcacgcgatc actcctcgga cgattcggcg gagacggtga aaacttcaag atgaacctct     360
tcaccgatga gatctatgct ttcactccca cggagaactg atcaagttgc ctcagggagc     420
ccagtgtgct ggacttttgc ttttgcccat ccattngcgc atcggctgtc aggccgtcgg     480
agcttaatgt aatggaaaga atgtgcc                                         507
```


(2) INFORMATION FOR SEQ ID NO:331

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 966 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

(2) INFORMATION FOR SEQ ID NO:333

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2375 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...2375

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:333

```
tgctcgcaaa caaaaccaac tctattcgac actggagcag aaaggattca ccgcccctcc      60
actacgatgt ggacttatga cgatcatatc cgcgacgaat gaacaaagcc atgagcctac     120
tgcgcgaaaa agactacgac tccttcctgc agcatacaaa gagatggcta tcgttctgcg     180
tgacctgatg gaaaaaaaga gcttatcctt tatccaacct ctctgaagct catttccgac     240
aaagattcga agaaatgaaa catggcgatc gggaaatagg cttcttcctt atcgcatgcc     300
ggaattagat gcaccggcca agcaatcaaa agaagcccac ggcaatcatt tatggcagaa     360
ctgggagcct tacttgccaa acatggtatg ggacaggcgg acaagacgac aaggcgatac     420
tggatgtagc cgaaggaaag cgactttgga gcagatcaat ctgcttttcc gtcatctccc     480
tgtggatatt cgttcgtgga cgaaaacgag ctggtttgtt tctatacgga cacaaagcaa     540
gagtattccc cagaagcaag ggggtgatcg gccgagaagt acgcaactcc atccgcccaa     600
gagcgttcat atagtagagg agataatcga taagttcgac gtggcgaaca ggatcgcgca     660
gaattctgga tcaataagcc cggagtttca tctacattgt ctatgtggcc atcagagacg     720
ccgacgggcg tttcccggtg tgatggaaat gatgcaagac tgcacacgga tccgtagtct     780
tgaagctcgc gtacacttct tacttgggac gaagagcaaa gtccggcaca aggtcgaaag     840
aaagcgaatc cgatactgcc ggagaagacg gcattcggcc ggcacgaagc tgaagagtct     900
cttgcagcgg tatccgcaac tgatggatga ttgccaacga tcagttccaa gttcaccctc     960
cttcgttctc cgatggccaa gtaattcttc ctgttgccac cattaaaatg atgagcgaac    1020
gcgccgacat ccgtcggata tgctcatcgg caaactggaa tcgctcatcg cttcgtacat    1080
aaaccggatc gatcggaaga gaaatagcat gaagaaggag gtgtgtcata atcatggcgc    1140
acctccttgc attaatatgg gacggtcggg tacaccctat tccgagactc ctaaggagtc    1200
cctaccgaga cccctaagga gtctcaccaa gacccctaag gagtctccac cgagatccct    1260
aaggagtccc taccagaccc ctaaggggtc ccaacagaga ctccttaggg gttcctcaat    1320
gcttacttca ggaggggttc gtgcggtctt ataatccatt cgaatggaga cacgggagca    1380
gtgaccggcg aaaggaagcc gaagcttagc gaatcttacc gcgaacagat tgatgatgcg    1440
gccggcacta cgtgcatcgt gctcggagtg gtcaccatga cgatggttgc accttcgcga    1500
ttgagacctc tgagcagttc atgacatcgg ctccgttttt ggagtcgagg ttacccgtgg    1560
gttcatcgcg aggatgagct tcggattggc caccacggcn cgggcgatag ccacgcgtgc    1620
tgttgtcctc cggagagctg attggggaag tggccggccc ggtggcgatg ctcatcttgc    1680
gcagtgcctc ctccactcgc tctttccgct cggagccttc acacccagat agacgagcgg    1740
caactccacg ttctcgctta ccgtatctct tcgatgaggt tgaagctctg gaatacgaag    1800
ccgatattgc cctacggacg gcagtcctgt ctttttcccg gaggttgccc acttctgccc    1860
cacgagcttg tagataccgg aagtgggatt gtcgagaagg ccgaggatat tagcagagtg    1920
gacttaccgc atcccgaagg ccccattatg gcgataaatt gcctttgtcc actttgagcg    1980
atacgccatc gagggctacc gtctctattc ttctgttctg aaaaccttgg tgaggttgct    2040
gatttcaatc attgttttct tgtttttatg aggtgaaagg aagagcgaca agccggacaa    2100
tgcctggcta tgaatccgcc gtttgccgga ttgtcgccgt atttattcgt atcggattca    2160
ttgacagggt tgcggcgagc tatgcgccgg aggttgatga caacgccaat gcaataatca    2220
```

(2) INFORMATION FOR SEQ ID NO:333

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 2375 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...2375

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:333

```
tgctcgcaaa caaaaccaac tctattcgac actggagcag aaaggattca ccgcccctcc    60
actacgatgt ggacttatga cgatcatatc cgcgacgaat gaacaaagcc atgagcctac   120
tgcgcgaaaa agactacgac tccttcctgc agcatacaaa gagatggcta tcgttctgcg   180
tgacctgatg gaaaaaaaga gcttatcctt tatccaacct ctctgaagct catttccgac   240
aaagattcga agaaatgaaa catggcgatc gggaaatagg cttcttcctt atcgcatgcc   300
ggaattagat gcaccggcca agcaatcaaa agaagcccac ggcaatcatt tatggcagaa   360
ctgggagcct tacttgccaa acatggtatg ggacaggcgg acaagacgac aaggcgatac   420
tggatgtagc cgaaggaaag cgactttgga gcagatcaat ctgcttttcc gtcatctccc   480
tgtggatatt cgttcgtgga cgaaaacgag ctggtttgtt tctatacgga cacaaagcaa   540
gagtattccc cagaagcaag ggggtgatcg gccgagaagt acgcaactcc atccgcccaa   600
gagcgttcat atagtagagg agataatcga taagttcgac gtggcgaaca ggatcgcgca   660
gaattctgga tcaataagcc cggagtttca tctacattgt ctatgtggcc atcagagacg   720
ccgacgggcg tttcccggtg tgatggaaat gatgcaagac tgcacacgga tccgtagtct   780
tgaagctcgc gtacacttct tacttgggac gaagagcaaa gtccggcaca aggtcgaaag   840
aaagcgaatc cgatactgcc ggagaagacg gcattcggcc ggcacgaagc tgaagagtct   900
cttgcagcgg tatccgcaac tgatggatga ttgccaacga tcagttccaa gttcaccctc   960
cttcgttctc cgatggccaa gtaattcttc ctgttgccac cattaaaatg atgagcgaac  1020
gcgccgacat ccgtcggata tgctcatcgg caaactggaa tcgctcatcg cttcgtacat  1080
aaaccggatc gatcggaaga gaaatagcat gaagaaggag gtgtgtcata atcatggcgc  1140
acctccttgc attaatatgg gacggtcggg tacaccctat tccgagactc ctaaggagtc  1200
cctaccgaga cccctaagga gtctcaccaa gacccctaag gagtctccac cgagatccct  1260
aaggagtccc taccagaccc ctaaggggtc ccaacagaga ctccttaggg gttcctcaat  1320
gcttacttca ggaggggttc gtgcggtctt ataatccatt cgaatggaga cacgggagca  1380
gtgaccggcg aaaggaagcc gaagcttagc gaatcttacc gcgaacagat tgatgatgcg  1440
gccggcacta cgtgcatcgt gctcggagtg gtcaccatga cgatggttgc accttcgcga  1500
ttgagacctc tgagcagttc atgacatcgg ctccgttttt ggagtcgagg ttacccgtgg  1560
gttcatcgcg aggatgagct tcggattggc caccacggcn cgggcgatag ccacgcgtgc  1620
tgttgtcctc cggagagctg attggggaag tggccggccc ggtggcgatg ctcatcttgc  1680
gcagtgcctc ctccactcgc tctttccgct cggagccttc acacccagat agacgagcgg  1740
caactccacg ttctcgctta ccgtatctct tcgatgaggt tgaagctctg gaatacgaag  1800
ccgatattgc cctacggacg gcagtcctgt cttttcccg gaggttgccc acttctgccc  1860
cacgagcttg tagataccgg aagtgggatt gtcgagaagg ccgaggatat tagcagagtg  1920
gacttaccgc atcccgaagg ccccattatg gcgataaatt gcctttgtcc actttgagcg  1980
atacgccatc gagggctacc gtctctattc ttctgttctg aaaaccttgg tgaggttgct  2040
gatttcaatc attgttttct tgttttttatg aggtgaaagg aagagcgaca agccggacaa  2100
tgcctggcta tgaatccgcc gtttgccgga ttgtcgccgt atttattcgt atcggattca  2160
ttgacagggt tgcggcgagc tatgcgccgg aggttgatga cuacgccaat gcaataatca  2220
```

```
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...826

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:335

actgcactga aagactcgcc atacagatct cgtcccgatt ctttgggcga tacaatttcc      60
tgttcatgga gcatcagctc atcgtagtag tcgatcaagc ctcggccgac gcacctccac     120
ccgtatattg ggacatctgc aaaggtgtcc ggcagcatcc gacaggaagt agtagccatg     180
cgtactgtat gtattcccgt atgctccatg gtggtttttgg ccggattgta gaaccatgtc     240
accggcccac ggcataagaa atacagcgca tttgccctga cggagtaccg gtacggaggc     300
aaatcgtctg tcgtgatccg gctcagatct tcgggaagca ccctccacca taaccgaaca     360
cacctacctt ggacggatcg gagaagccat tgcacggagc tgttcgtccg taaggcgata     420
cactccactt gcatcgacac gatcttgacc caatgtcccg aagccattag cgaacggtcg     480
gccgtcttcc catagctcgt tgcgctttcg caggcaaagc aagggcaagg aagagagaag     540
gaatgcgact attggaagta ttcgtttcat ctgagaaata gcttatttat ggatatgtcg     600
agcagttttt gctcttcgag ataggcttcg aggtgctccc gatagcaatg gggcctaccc     660
ctgccggagt ccctgtaaag ataagacccc catacgaagt gtgaagaaac gactggcata     720
agcgatcaaa cgatcacgga aaagagcata tcccgtgtat tgccctgctg caccgtgcgt     780
nccgctatat ccaatcgcag gcccaattcc tgcacaccgt gcccgg                    826


(2) INFORMATION FOR SEQ ID NO:336

     (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 922 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...922

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:336

atatcatccc gatacgcaac ttatggtgaa tgcggaacgg aattgattcg acacactcca      60
ccatattagg atcttatccc aaaacgaaaa agcctccgct ctccctaaca aggtgagtcg     120
gaggcttttt agtatccgtt agctaagctt acttcagcgt accttgctgt gcttgttcga     180
tcatcttggc attcggaaga tataaacctc cacacggcgg ttggccgaac gtccggcaac     240
```

```
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...826

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:335

actgcactga aagactcgcc atacagatct cgtcccgatt ctttgggcga tacaatttcc      60
tgttcatgga gcatcagctc atcgtagtag tcgatcaagc ctcggccgac gcacctccac     120
ccgtatattg ggacatctgc aaaggtgtcc ggcagcatcc gacaggaagt agtagccatg     180
cgtactgtat gtattcccgt atgctccatg gtggttttgg ccggattgta gaaccatgtc     240
accggcccac ggcataagaa atacagcgca tttgccctga cggagtaccg gtacggaggc     300
aaatcgtctg tcgtgatccg gctcagatct tcgggaagca ccctccacca taaccgaaca     360
cacctacctt ggacggatcg gagaagccat tgcacggagc tgttcgtccg taaggcgata     420
cactccactt gcatcgacac gatcttgacc caatgtcccg aagccattag cgaacggtcg     480
gccgtcttcc catagctcgt tgcgctttcg caggcaaagc aagggcaagg aagagagaag     540
gaatgcgact attggaagta ttcgtttcat ctgagaaata gcttatttat ggatatgtcg     600
agcagttttt gctcttcgag ataggcttcg aggtgctccc gatagcaatg gggcctaccc     660
ctgccggagt ccctgtaaag ataagacccc catacgaagt gtgaagaaac gactggcata     720
agcgatcaaa cgatcacgga aaagagcata tcccgtgtat tgccctgctg caccgtgcgt     780
nccgctatat ccaatcgcag gcccaattcc tgcacaccgt gcccgg               826


(2) INFORMATION FOR SEQ ID NO:336

       (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 922 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...922

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:336

atatcatccc gatacgcaac ttatggtgaa tgcggaacgg aattgattcg acacactcca      60
ccatattagg atcttatccc aaaacgaaaa agcctccgct ctccctaaca aggtgagtcg     120
gaggcttttt agtatccgtt agctaagctt acttcagcgt accttgctgt gcttgttcga     180
tcatcttggc attcggaaga tataaacctc cacacggcgg ttggccgaac gtccggcaac     240
```

(i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 749 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...749

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:338

```
ggctcagtcc ggacaggaga aggccaaaga gggaggggct ttcgatcagc cattgtcaaa      60
gggcgaaagg ccatccacct gcacagtatt cgtaccaacc ggagcgtaag caaggttggc     120
agagcgatcc caaagccgta gctttccgaa caaaagagaa tacaaccgct ttctgcacaa     180
tgcctggatg ctcgtggcaa atcgcagttc tataatgccg atttcctgca ggcgcaggct     240
acatttctta tatcgcacgc ttatacagcg acgaaccgat aatccgcgat gaagccgtct     300
ttggcaggta cgctgctaca gtgagatggg gtggctgcat gaagggagcg tttgctcgag     360
cgcatcccta aagatcttcc gcatgtcgat cgagagggtt gtattctttg gcagtggcag     420
agcgttcgat cctgtcgggt gcaagcgcgc ggccatacct tatctccaac aggcagcaag     480
acaagagaaa acaagcgaca acgcgctcgt atgtattatc tgctcggaca gcttttacag     540
aaaacaatcg gccggaggag gctcgcaagg cctattccaa agtgttgcgg cttctccgcc     600
tttcgctttg gactttgccg cacggatcag gaagatgagc tggagggtga acggaatccc     660
cgtacagtag cccgctcgat tggaacgatg gccaacaaaa ggcaagttcc aaaggatgta     720
ttgggatcag atctttatgc aagcaggca                                       749
```

(2) INFORMATION FOR SEQ ID NO:339

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 700 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...700

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:339

```
gggcagatag tcgttggacg taccctcgcc gcgtatggca gctatgggcg gaggtaatcg      60
cccaaagcat tttccagttt caggcctccg catttgccag aaagatcaca gccttggggt     120
gtatagccca gagcaagtcc atgatggagc cgcattggca ctacccatgc cgaagttgat     180
```

(i) SEQUENCE CHARACTERISTICS:
  (A) LENGTH: 749 base pairs
  (B) TYPE: nucleic acid
  (C) STRANDEDNESS: double
  (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
  (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
  (A) NAME/KEY: misc_feature
  (B) LOCATION 1...749

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:338

```
ggctcagtcc ggacaggaga aggccaaaga gggaggggct ttcgatcagc cattgtcaaa      60
gggcgaaagg ccatccacct gcacagtatt cgtaccaacc ggagcgtaag caaggttggc     120
agagcgatcc caaagccgta gctttccgaa caaaagagaa tacaaccgct ttctgcacaa     180
tgcctggatg ctcgtggcaa atcgcagttc tataatgccg atttcctgca ggcgcaggct     240
acatttctta tatcgcacgc ttatacagcg acgaaccgat aatccgcgat gaagccgtct     300
ttggcaggta cgctgctaca gtgagatggg gtggctgcat gaagggagcg tttgctcgag     360
cgcatcccta aagatcttcc gcatgtcgat cgagagggtt gtattctttg gcagtggcag     420
agcgttcgat cctgtcgggt gcaagcgcgc ggccatacct tatctccaac aggcagcaag     480
acaagagaaa acaagcgaca acgcgctcgt atgtattatc tgctcggaca gcttttacag     540
aaaacaatcg gccggaggag gctcgcaagg cctattccaa agtgttgcgg cttctccgcc     600
tttcgctttg gactttgccg cacggatcag gaagatgagc tggagggtga acggaatccc     660
cgtacagtag cccgctcgat tggaacgatg gccaacaaaa ggcaagttcc aaaggatgta     720
ttgggatcag atctttatgc aagcaggca                                       749
```

(2) INFORMATION FOR SEQ ID NO:339

  (i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 700 base pairs
    (B) TYPE: nucleic acid
    (C) STRANDEDNESS: double
    (D) TOPOLOGY: circular

  (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: UNKNOWN

  (vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

  (ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...700

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:339

```
gggcagatag tcgttggacg taccctcgcc gcgtatggca gctatgggcg gaggtaatcg      60
cccaaagcat tttccagttt caggcctccg catttgccag aaagatcaca gccttggggt     120
gtatagccca gagcaagtcc atgatggagc cgcattggca ctacccatgc cgaagttgat     180
```

```
                    (C) STRANDEDNESS: double
                    (D) TOPOLOGY: circular

          (ii) MOLECULE TYPE: DNA (genomic)

         (iii) HYPOTHETICAL: NO

          (iv) ANTI-SENSE: UNKNOWN

          (vi) ORIGINAL SOURCE:
                    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

          (ix) FEATURE:
                    (A) NAME/KEY: misc_feature
                    (B) LOCATION 1...566

          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:341


cgtgtctttc cattcagata aaatcaaaga ggcgaaagag gatttggctg cttcgagaaa        60
cgagtggaac gggatgcaga gggacttcca atcaacaact cacaattaag ggtgtagaag       120
gaagtacgga catcaaggtt attgctgtcg cttgcaggag atcgaggaga aagcacgcac       180
caagggtgaa tacaataaat cggtgagatt tatggctttt ccatcatggt caagacggaa       240
aactctcaaa gagttgttcg actgctcctc caaccgcttt tcgtgaaagg gcanagagca       300
tctactatac ctacaataac gggaagttgg cttctgatcc caacttgctt gtcagaactt       360
tatcaatgct ctcgagcgta ttccaaaggt gatgaatcac accgagaaag ataaggaaaa       420
ggtttctgca aacaaggagg ttatatgacc attgcgggtg ggtcgtggaa gaaagaggac       480
gagcttcgct tctcaaagga caggcagccc gaactgggat agaaaaattg cactcacgcc       540
gcacctcccg gaggaagaga aagaaa                                           566



(2) INFORMATION FOR SEQ ID NO:342

           (i) SEQUENCE CHARACTERISTICS:
                    (A) LENGTH: 1212 base pairs
                    (B) TYPE: nucleic acid
                    (C) STRANDEDNESS: double
                    (D) TOPOLOGY: circular

          (ii) MOLECULE TYPE: DNA (genomic)

         (iii) HYPOTHETICAL: NO

          (iv) ANTI-SENSE: UNKNOWN

          (vi) ORIGINAL SOURCE:
                    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

          (ix) FEATURE:
                    (A) NAME/KEY: misc_feature
                    (B) LOCATION 1...1212

          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:342


tcagaagaga attttatcta tctctatttg caaaagaaaa agccaacatt atagaagaag        60
aaaatttgat attttggact aaaggatttg ttgcaggcta aataaagact ttataagtgc       120
atctcatatc ctaatgccat atttagacat gcgttgcgta atattgctga aatcaagaaa       180
ggaaacataa ctacttagag aaaaaacgac aagaggctcc ttctttaggt gtaattttcc       240
ctatgttcaa ggtgtaattg aagaagaaat actgtatgaa atagaatcct ttctaatcat       300
gggatagatg tcaattttag gaataattta tctcatggac ttcaacccct tttgaaattg       360
aaaaatatgg gatttatttg tggtggatat gctaaaacta tattttgaag aaaagaatat       420
gataaaaatc gctccctaaa ttataaaaga gataaagaat tactagcctt acggcctctg       480
cgaggctttt aaaaccagat gaaagtgaat aactttgcat tttggcatca aaattcttgt       540
```

(C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...566

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:341

```
cgtgtctttc cattcagata aaatcaaaga ggcgaaagag gatttggctg cttcgagaaa      60
cgagtggaac gggatgcaga gggacttcca atcaacaact cacaattaag ggtgtagaag     120
gaagtacgga catcaaggtt attgctgtcg cttgcaggag atcgaggaga aagcacgcac     180
caagggtgaa tacaataaat cggtgagatt tatggctttt ccatcatggt caagacggaa     240
aactctcaaa gagttgttcg actgctcctc caaccgcttt tcgtgaaagg gcanagagca     300
tctactatac ctacaataac gggaagttgg cttctgatcc caacttgctt gtcagaactt     360
tatcaatgct ctcgagcgta ttccaaaggt gatgaatcac accgagaaag ataaggaaaa     420
ggtttctgca aacaaggagg ttatatgacc attgcgggtg ggtcgtggaa gaaagaggac     480
gagcttcgct tctcaaagga caggcagccc gaactgggat agaaaaattg cactcacgcc     540
gcacctcccg gaggaagaga aagaaa                                         566
```


(2) INFORMATION FOR SEQ ID NO:342

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1212 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1212

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:342

```
tcagaagaga attttatcta tctctatttg caaaagaaaa agccaacatt atagaagaag      60
aaaatttgat attttggact aaaggatttg ttgcaggcta aataaagact ttataagtgc     120
atctcatatc ctaatgccat atttagacat gcgttgcgta atattgctga aatcaagaaa     180
ggaaacataa ctacttagag aaaaaacgac aagaggctcc ttctttaggt gtaattttcc     240
ctatgttcaa ggtgtaattg aagaagaaat actgtatgaa atagaatcct ttctaatcat     300
gggatagatg tcaattttag gaataattta tctcatggac ttcaacccct tttgaaattg     360
aaaaatatgg gatttatttg tggtggatat gctaaaacta tattttgaag aaaagaatat     420
gataaaaatc gctccctaaa ttataaaaga gataaagaat tactagcctt acggcctctg     480
cgaggctttt aaaaccagat gaaagtgaat aactttgcat tttggcatca aaattcttgt     540
```

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...544

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:344

```
gatcgcagga tcagattatc cccgtgaagt tgagtgattt aagacggata caaaagagtt    60
tatcgccaac cccacgaatc gtgccgatct tcccgagagg aaaagcgcga ggtagtaggg   120
cttggtacca tggaactggt tacttctctt atgctatttc gatcaaaaat cagatcgaga   180
ccagctatca gatgtaatca gtgtacaaaa tgaactcatt gctgcatata acgaagtttg   240
ggacgatttg ctcaaaagta tttccacaaa ccatacaagg agcttactcc ttccagcaga   300
aggctgtttt agaagcatat ccgntgcaca tttcagaaat gccttgtcta atctcaagta   360
aagaataagg aacaaaatgg gaaagtttaa taatccggcg ggcgtgaaat gcccgaactc   420
aatacctcgt ctttgcctga ctggtttttg cgttcctctt ctttatcatg atggtaacga   480
caattcgtga gtgacgccca aggtgtcgta taataacctn cctaaagcga ctgaattgac   540
aagc                                                                 544
```

(2) INFORMATION FOR SEQ ID NO:345

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 851 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...851

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:345

```
gcaaaaaact gcagagaaag ttaggcccta tctccatagc cactccggag ctctcttgaa    60
tgcgcatgaa atgctgagag acaagatgca ctacttcacg agcagacgca atgcagtgtg   120
ggtattttta ttcatcgtgg attcaagatg cgggtaaggt cttgctcctg atggagaatg   180
aaggtgacga agaactctcg cttatgctcg ttcgttggct cgcaacaatg gcagtgtgct   240
cgatgactac ccgagaccga tggtttaccg ccgactctat ccatgggaga aaacgactga   300
aagccggatt gccatcgaca atcaatatca gcagctacca cttatgctcg tcagctaccg   360
ctattggttg cgctttgccg gtgagtgtcc gatgtgatcg agcacttgcc ctctaccatc   420
attatccatc atcgaaatga cgctcttcga cattgaaagc tgcaatgata tgagaataat   480
cgaacaagat cttggctgcg cccatatgaa tcagtaatag aaagcagact gaagtatgcc   540
gcaaacgaga gacggatttg accggaggaa gatccggagg attgagcgct tcgccaatgg   600
acatctctat tacggtcttc atcaggacgg ggattcgggg tgattcgtga gttcgcgccc   660
gaagccacgg ccgtatatct gatcgggaac tttcgcgctg gcgtagattg ccacagtttc   720
ggtttgcgcc tgtggtgaag cgggttcatg ggaattgcga ctttcatgcc gactgcttcc   780
gcatgctctc gctacaggct cttcttcgaa tggcccggtg gcgaaggaga gagataccgg   840
cttggtgcaa c                                                         851
```

(2) INFORMATION FOR SEQ ID NO:346

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...544

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:344

gatcgcagga tcagattatc cccgtgaagt tgagtgattt aagacggata caaaagagtt   60
tatcgccaac cccacgaatc gtgccgatct tcccgagagg aaaagcgcga ggtagtaggg   120
cttggtacca tggaactggt tacttctctt atgctatttc gatcaaaaat cagatcgaga   180
ccagctatca gatgtaatca gtgtacaaaa tgaactcatt gctgcatata acgaagtttg   240
ggacgatttg ctcaaaagta tttccacaaa ccatacaagg agcttactcc ttccagcaga   300
aggctgtttt agaagcatat ccgntgcaca tttcagaaat gccttgtcta atctcaagta   360
aagaataagg aacaaaatgg gaaagtttaa taatccggcg ggcgtgaaat gcccgaactc   420
aatacctcgt ctttgcctga ctggtttttg cgttcctctt ctttatcatg atggtaacga   480
caattcgtga gtgacgccca aggtgtcgta taataacctn cctaaagcga ctgaattgac   540
aagc   544

(2) INFORMATION FOR SEQ ID NO:345

       (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 851 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...851

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:345

gcaaaaaact gcagagaaag ttaggcccta tctccatagc cactccggag ctctcttgaa   60
tgcgcatgaa atgctgagag acaagatgca ctacttcacg agcagacgca atgcagtgtg   120
ggtattttta ttcatcgtgg attcaagatg cgggtaaggt cttgctcctg atggagaatg   180
aaggtgacga agaactctcg cttatgctcg ttcgttggct cgcaacaatg gcagtgtgct   240
cgatgactac ccgagaccga tggtttaccg ccgactctat ccatgggaga aaacgactga   300
aagccggatt gccatcgaca atcaatatca gcagctacca cttatgctcg tcagctaccg   360
ctattggttg cgctttgccg gtgagtgtcc gatgtgatcg agcacttgcc ctctaccatc   420
attatccatc atcgaaatga cgctcttcga cattgaaagc tgcaatgata tgagaataat   480
cgaacaagat cttggctgcg cccatatgaa tcagtaatag aaagcagact gaagtatgcc   540
gcaaacgaga gacggatttg accggaggaa gatccggagg attgagcgct cgccaatgg   600
acatctctat tacggtcttc atcaggacgg ggattcgggg tgattcgtga gttcgcgccc   660
gaagccacgg ccgtatatct gatcgggaac tttcgcgctg gcgtagattg ccacagtttc   720
ggtttgcgcc tgtggtgaag cgggttcatg ggaattgcga ctttcatgcc gactgcttcc   780
gcatgctctc gctacaggct cttcttcgaa tggcccggtg gcgaaggaga gagataccgg   840
cttggtgcaa c   851

(2) INFORMATION FOR SEQ ID NO:346

```
cggaaaggtg ggctatcgtt tcggtatcct acccttttga tctttctctt caccggtatg    180
ctcttcggag tggatgattc ggttttcagt tttctaaatg cccgatgtgg gcacaagtcg    240
gtaggatcat cgctctctcc attattctct tcaccggtgg tatggatacg cggacagaaa    300
ggtgcgtccg gtcattgccc agggacttac gctgtctact ttggtgtctt gctgacagct    360
cttctatccg ggttctttat cttttggctg agggttcgga ctttggccct tacccgttcg    420
ctctttctac ctctttgctg cggctgccac gatggccagt acncgactcg gcttcggtat    480
tcgccatcct cgttcgcaaa agatgcagct caaagagaat ctggctcccg acactggagt    540
ggagagcggt agtaacgacc cccatggcgt atatgctgac catcgcacca tcgatttcat    600
caccaccg                                                            608
```

(2) INFORMATION FOR SEQ ID NO:348

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 475 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...475

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:348

```
gagctggtct tcgatacggt catccagcgc aacatcaaac taagcgaggc cccagccacg     60
gtattccggc actgctctac gatgccgata gccgcggacg gtcaatcata tgcagctggc    120
ggccgagctg atcaaaaagc acaaacaaaa ggagcctgac tctcatatga agcatacgaa    180
gaaaacgctc ggtcgtgcct ggactccctc ctcgatgcgg aggtcatagg gtcttcttcc    240
atcaggaagt ggccatcagc gatatatacc ccaatcccga tcaaccgcgc cggatttcga    300
ggaggagtcc ctgaaagaac tggccgcttc gctccgttcg atagattggt acagcccatc    360
acactactga agaagtccgn cggcgactat atatcatctn cggagaacgc cgcttggcgt    420
gcggcccgaa tggccggtat gccaccctgn cggcatacat caagacggaa gagga         475
```

(2) INFORMATION FOR SEQ ID NO:349

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 729 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:

```
cggaaaggtg ggctatcgtt tcggtatcct acccttttga tctttctctt caccggtatg    180
ctcttcggag tggatgattc ggttttcagt tttctaaatg cccgatgtgg gcacaagtcg    240
gtaggatcat cgctctctcc attattctct tcaccggtgg tatggatacg cggacagaaa    300
ggtgcgtccg gtcattgccc agggacttac gctgtctact ttggtgtctt gctgacagct    360
cttctatccg ggttctttat cttttggctg agggttcgga ctttggccct tacccgttcg    420
ctctttctac ctctttgctg cggctgccac gatggccagt acncgactcg gcttcggtat    480
tcgccatcct cgttcgcaaa agatgcagct caaagagaat ctggctcccg acactggagt    540
ggagagcggt agtaacgacc cccatggcgt atatgctgac catcgcacca tcgatttcat    600
caccaccg                                                             608
```

(2) INFORMATION FOR SEQ ID NO:348

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 475 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...475

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:348

```
gagctggtct tcgatacggt catccagcgc aacatcaaac taagcgaggc cccagccacg    60
gtattccggc actgctctac gatgccgata gccgcggacg gtcaatcata tgcagctggc    120
ggccgagctg atcaaaaagc acaaacaaaa ggagcctgac tctcatatga agcatacgaa    180
gaaaacgctc ggtcgtgcct ggactccctc ctcgatgcgg aggtcatagg gtcttcttcc    240
atcaggaagt ggccatcagc gatatatacc ccaatcccga tcaaccgcgc cggatttcga    300
ggaggagtcc ctgaaagaac tggccgcttc gctccgttcg atagattggt acagcccatc    360
acactactga agaagtccgn cggcgactat atatcatctn cggagaacgc cgcttggcgt    420
gcggcccgaa tggccggtat gccaccctgn cggcatacat caagacggaa gagga         475
```

(2) INFORMATION FOR SEQ ID NO:349

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 729 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
```

(C) STRANDEDNESS: double
           (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
           (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
           (A) NAME/KEY: misc_feature
           (B) LOCATION 1...878

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:351

```
gccgtgtaag cgcaataggg tcaagcgttt ggtcagggag gcttatcggt caacaaacac      60
ctcctgaacg atgtcctcca agagagacag atctatgcac tattgcattt atggtagtat     120
cggatgaact tcctgacttt cgtacaggga gagagcgatg caaaagagtc tgatcagaat     180
tgccggaaat gtacctcatc ggctttgaaa aacgagtaaa tacgatgcga ctgatcaagg     240
ctttttcgtg caactcttac tgctccccat tttcttctac aagcggttta tatcccgctt     300
acaccgcctt catgccggtt tacccctca tgttcgtcct atgcatcgaa gccttacgta     360
aatatggccc gggcaaagga ctattgctga gctcaagcgt attctccgct gtcacccgtg     420
gggtggaagt ggctatgacc cgttccgtaa gaagtttct tcacttaatt cctcttatat     480
ggtatttctc acattcatac tcattctgca gctcgcaacg atagcgagat cattcgagtc     540
ggaatctacg accgaatgaa accatatctc cgaatacttt ttgctccacg gcattcatcc     600
gtggagtgta ccagagaatt atagcggaga gttgcttctg tccgtgaagg attgaatcac     660
gacgaggttg ttgctctggg agaatggggc tggataaggt gtgcagtaca ccgtatgaaa     720
agcaacgaaa agcttcctcg atcaaattga tctgagcgaa gagtttggca tgccggtgct     780
actgacatag tacgagcatg ggatgatctt ttggcgatca aaaacaggta aagcttcaca     840
gcccgtggat cgttcatggt ttcggagtag tgaaaaac                             878
```


(2) INFORMATION FOR SEQ ID NO:352

       (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 500 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: double
           (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
           (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
           (A) NAME/KEY: misc_feature
           (B) LOCATION 1...500

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:352

```
gatttttctg aaaccactag tagatttttc tgaaactaat atcagattca cgtactgaaa      60
aattaagtct tatcaaagca cacttggtac ggctttgacg ctctactttt cattccacga     120
gcgattaacg caactcttct tcgatcaacg gaactcggta cgacggttca gttggtcgca     180
gactgactgc tgctcccggt caaaggtgct acgaattcct cggtgagcac atcgccttcc     240
```

```
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...878

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:351
```

```
gccgtgtaag cgcaataggg tcaagcgttt ggtcagggag gcttatcggt caacaaacac      60
ctcctgaacg atgtcctcca agagagacag atctatgcac tattgcattt atggtagtat     120
cggatgaact tcctgacttt cgtacaggga gagagcgatg caaaagagtc tgatcagaat     180
tgccggaaat gtacctcatc ggctttgaaa aacgagtaaa tacgatgcga ctgatcaagg     240
cttttcgtg caactcttac tgctccccat tttcttctac aagcggttta tatcccgctt      300
acaccgcctt catgccggtt taccccctca tgttcgtcct atgcatcgaa gccttacgta     360
aatatggccc gggcaaagga ctattgctga gctcaagcgt attctccgct gtcacccgtg     420
gggtggaagt ggctatgacc cgttccgtaa gaagttttct tcacttaatt cctcttatat     480
ggtatttctc acattcatac tcattctgca gctcgcaacg atagcgagat cattcgagtc     540
ggaatctacg accgaatgaa accatatctc cgaatacttt ttgctccacg gcattcatcc     600
gtggagtgta ccagagaatt atagcggaga gttgcttctg tccgtgaagg attgaatcac     660
gacgaggttg ttgctctggg agaatggggc tggataaggt gtgcagtaca ccgtatgaaa     720
agcaacgaaa agcttcctcg atcaaattga tctgagcgaa gagtttggca tgccggtgct     780
actgacatag tacgagcatg ggatgatctt ttggcgatca aaaacaggta aagcttcaca     840
gcccgtggat cgttcatggt ttcggagtag tgaaaaac                             878
```

```
(2) INFORMATION FOR SEQ ID NO:352

     (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 500 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...500

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:352
```

```
gattttctg aaaccactag tagatttttc tgaaactaat atcagattca cgtactgaaa      60
aattaagtct tatcaaagca cacttggtac ggctttgacg ctctactttt cattccacga     120
gcgattaacg caactcttct tcgatcaacg gaactcggta cgacggttca gttggtcgca     180
gactgactgc tgctcccggt caaaggtgct acgaattcct cggtgagcac atcgccttcc     240
```

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:354

```
ccgatgccgc tacctccggt tttggtcgta tagaaaggaa caaacatatg tcgaacacct      60
cttgaggaat aggagtgcca ttgttctcca catgaagggt agtctgtgtt catccaacga     120
atcgagacgt tcctcgacac gaatacgaaa agtcgtttct ccgtatcggc aggatattcc     180
gcctcggcag cattttgacg aggtttatca gtaccgaagt caattgccgg cggtcggccg     240
ggacatcagc tccacgggta tttcttcaat atccaccttt atatcgttgg aggaagaagc     300
tcttcttgca ggcgcaatat ccccgaaaga aaagcatgta aagaatgtcc tccttctcgg     360
gaggaggaac tgccgtaaac ttacggtagt ccgtacaaag gataacagcc ccactccggt     420
actacgaatg gtatccaatc cgtagacagc atc                                  453
```


(2) INFORMATION FOR SEQ ID NO:355

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 988 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...988

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:355

```
ggcggccttc taccaaatag cacaggcttt cagagggagc cgaagcctct agccattcct      60
tcttttgccg aatatgagga tgcttgtcgg atgtacgaca cgaagtctgc ttctatcctt     120
ctaatgagga cataggcgag gctgattttc caatatggat ttctgctggc tttgtaaccc     180
gaacaatccc gatggcgact gctgcagcgg acagagatcc tgcgtctgct caacgatcat     240
cctgaacgac attcgtcctc gaccagtcct atgtatcgtt tacgaccgag gaaggattcg     300
tccggccgac atcaaaggac ggaaaaacct tgtcatggtc tatctttcag tcatgcctat     360
gggataccgg ggcttcgcat cggctatatc gtgccaataa agatttatg aagcgtgtgg     420
cggctttcag tacgccgtgg gggtaaacgc actggctata gaggctgcca aattcatcct     480
tatccatcct cacaattcac tctgccgatc cgcaagtggc aacgcaatac ggtagattta     540
tcacagccct gaatcgcctc gatggtgtag aagtacatcc ctcaggcaca cgttcttcct     600
ccttcgcctc aagaaaggaa cagcggccga actgaaaaat atatgctgga ggaatataat     660
atgctgattc gggatgcttc caatttcgtg gtctcgatga atcctacgtc cgaatcacca     720
cgcagcgacc tgctcgaacc agctttcat caaagctctg gagacattcc tcgagaaata     780
ctaaaatagc agatgctgca gatcagtctc tgtccttctc ctgtactcta tcctattaca     840
agacggagca agaagagtac acggtgttat cgtggatatc ttcgtgccgg taccaccatc     900
acaacggcac tgatgaacgg tgccgtagca tatccgatgc accgttgaga gcggaaatct     960
atgccgggaa cggttcttcg agagcgag                                        988
```


(2) INFORMATION FOR SEQ ID NO:356

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 685 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:354

```
ccgatgccgc tacctccggt tttggtcgta tagaaaggaa caaacatatg tcgaacacct       60
cttgaggaat aggagtgcca ttgttctcca catgaagggt agtctgtgtt catccaacga      120
atcgagacgt tcctcgacac gaatacgaaa agtcgtttct ccgtatcggc aggatattcc      180
gcctcggcag cattttgacg aggtttatca gtaccgaagt caattgccgg cggtcggccg      240
ggacatcagc tccacgggta tttcttcaat atccaccttt atatcgttgg aggaagaagc      300
tcttcttgca ggcgcaatat ccccgaaaga aaagcatgta aagaatgtcc tccttctcgg      360
gaggaggaac tgccgtaaac ttacggtagt ccgtacaaag gataacagcc ccactccggt      420
actacgaatg gtatccaatc cgtagacagc atc                                   453
```

(2) INFORMATION FOR SEQ ID NO:355

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 988 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...988

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:355

```
ggcggccttc taccaaatag cacaggcttt cagagggagc cgaagcctct agccattcct       60
tcttttgccg aatatgagga tgcttgtcgg atgtacgaca cgaagtctgc ttctatcctt      120
ctaatgagga cataggcgag gctgattttc caatatggat ttctgctggc tttgtaaccc      180
gaacaatccc gatggcgact gctgcagcgg acagagatcc tgcgtctgct caacgatcat      240
cctgaacgac attcgtcctc gaccagtcct atgtatcgtt tacgaccgag gaaggattcg      300
tccggccgac atcaaaggac ggaaaaacct tgtcatggtc tatctttcag tcatgcctat      360
gggataccgg ggcttcgcat cggctatatc gtgccaataa agattttatg aagcgtgtgg      420
cggctttcag tacgccgtgg gggtaaacgc actggctata gaggctgcca aattcatcct      480
tatccatcct cacaattcac tctgccgatc cgcaagtggc aacgcaatac ggtagattta      540
tcacagccct gaatcgcctc gatggtgtag aagtacatcc ctcaggcaca cgttcttcct      600
ccttcgcctc aagaaaggaa cagcggccga actgaaaaat atatgctgga ggaatataat      660
atgctgattc gggatgcttc caatttcgtg gtctcgatga atcctacgtc cgaatcacca      720
cgcagcgacc tgctcgaacc agcttttcat caaagctctg gagacattcc tcgagaaata      780
ctaaaatagc agatgctgca gatcagtctc tgtccttctc ctgtactcta tcctattaca      840
agacggagca agaagagtac acggtgttat cgtggatatc ttcgtgccgg taccaccatc      900
acaacggcac tgatgaacgg tgccgtagca tatccgatgc accgttgaga gcggaaatct      960
atgccgggaa cggttcttcg agagcgag                                         988
```

(2) INFORMATION FOR SEQ ID NO:356

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 685 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

aatgggattc aatgatgcag tgcagcca

(2) INFORMATION FOR SEQ ID NO:358

    (i) SEQUENCE CHARACTERISTICS:
      (A) LENGTH: 1812 base pairs
      (B) TYPE: nucleic acid
      (C) STRANDEDNESS: double
      (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
      (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
      (A) NAME/KEY: misc_feature
      (B) LOCATION 1...1812

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:358

```
ggaaaataat acaaagtact ctcatattgg taattcacaa tggcaaaaaa tatctaagca    60
cactgaaagt atcggccgga ctattctccg ccatcttgtt gtcttattgg ccagcggact   120
tctggccaat gcacagacag ttagcacgag acgaaagatc aaggtctgca gatgagcctc   180
ttgatctctt ctcctttaca gaagcggtat acactcgcta cggtcatgtc gcattcagga   240
ttctcatccc gtacaaggga cggatattgc ttacaattat ggcatgttcg attaaacgaa   300
cctaatttca tgcttcgatt tgtacgaggc gaaacggatt attccgttga agctctttat   360
acatcctatt atgtggaaga ataccttcgg agggaagagg aatcgtggaa ttagtattga   420
atctcacaca ggaagagatc gaaaagctga gaggtatttg gcatggaata ttcgccccga   480
gaataaacga accgctataa tatcttttat gacaactgtg ctacccgcct tatcgagata   540
taaaagaaac cacaggagct accttgcaaa tccctcatga gggtgaggga gaaagtggag   600
acagctgatc gatgaatgct gtaccgatgc cccttggtca agttcggcat cgatctggct   660
ctcggggcga aaacagatac ctatgcaatc cggaggagca gttattcctg ccgaatagaa   720
tgttggatct gctacacgta ccactctact ctatcccaat ggtcgatcaa cgccactcat   780
caggatacca aagagtggtt tccggctaag ccggccagta tggaacctgc ggagagggct   840
ggcctacacc tttattggct tctatagctt tgctgatagt tttattgcag tagctgtttg   900
ggatgttcgt cgcaaggata tatgctatgt aatgactcta tcttattagc cattatgggg   960
ttatcgggat gtgttatttt attctgtcat ttttctcaga acatccgcat accaacccga  1020
attacaatct ttcctgcttc atccccttca tctgcttatc gggttgcctc tgactgtgta  1080
ccgctctttc accgagcagg ctttgtctat cattttatta actttgcgag ctaagtttga  1140
tcggtttggc aatatggttt ttgccgcaac aagtaggctc ccgctctatg tggccggcat  1200
tgctctatgg ttgctttccg ctcgcggata ttggtaaata gatggagaaa gaacgttcgg  1260
tgaaacgact tgtacgaccc ttttggccgt attgactata gggaatgtta cagtacaggg  1320
gcatcggttc atcccaagct ggtggtggta attaccattg accagttgag agtgatctcc  1380
tctcgttttg ccgctcacaa tatggcacag gtggatttaa tatctgctgc aggatggact  1440
tgtttttagc aacgtagact tcggattcga ggggtagacg aagcatcggc tattgcaggt  1500
atatataccg gcacctatct aatcgtcaca gtattacagg cagtactgta ttcgacagag  1560
aaaagaacag tcggtatcca ttttggaaga caaaaacttc ttaggcaatt atacatcgaa  1620
catctgtctc ctctcaagct cacttccggc actatcggcg atgaacacgg agtgcaacgg  1680
atggaaggag caaggtttat gcgatagcac cgaatccgta gcagcaatcg tagctgcagg  1740
tcagtctgga aatggtgcat tctgctcgaa gatcgtaagg ggatgtgggc tacgactacc  1800
tactacaaag at                                                       1812
```

(2) INFORMATION FOR SEQ ID NO:359

   (i) SEQUENCE CHARACTERISTICS:

aatgggattc aatgatgcag tgcagcca

(2) INFORMATION FOR SEQ ID NO:358

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1812 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1812

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:358

```
ggaaaataat acaaagtact ctcatattgg taattcacaa tggcaaaaaa tatctaagca     60
cactgaaagt atcggccgga ctattctccg ccatcttgtt gtcttattgg ccagcggact    120
tctggccaat gcacagacag ttagcacgag acgaaagatc aaggtctgca gatgagcctc    180
ttgatctctt ctcctttaca gaagcggtat acactcgcta cggtcatgtc gcattcagga    240
ttctcatccc gtacaaggga cggatattgc ttacaattat ggcatgttcg attaaacgaa    300
cctaatttca tgcttcgatt tgtacgaggc gaaacggatt attccgttga agctctttat    360
acatcctatt atgtggaaga ataccttcgg agggaagagg aatcgtggaa ttagtattga    420
atctcacaca ggaagagatc gaaaagctga gaggtatttg gcatggaata ttcgccccga    480
gaataaacga accgctataa tatcttttat gacaactgtg ctacccgcct tatcgagata    540
taaaagaaac cacaggagct accttgcaaa tccctcatga gggtgaggga gaaagtggag    600
acagctgatc gatgaatgct gtaccgatgc cccttggtca agttcggcat cgatctggct    660
ctcggggcga aaacagatac ctatgcaatc cggaggagca gttattcctg ccgaatagaa    720
tgttggatct gctacacgta ccactctact ctatcccaat ggtcgatcaa cgccactcat    780
caggatacca aagagtggtt tccggctaag ccggccagta tggaacctgc ggagagggct    840
ggcctacacc tttattggct tctatagctt tgctgatagt tttattgcag tagctgtttg    900
ggatgttcgt cgcaaggata tatgctatgt aatgactcta tcttattagc cattatgggg    960
ttatcgggat gtgttatttt attctgtcat ttttctcaga acatccgcat accaacccga   1020
attacaatct ttcctgcttc atccccttca tctgcttatc gggttgcctc tgactgtgta   1080
ccgctctttc accgagcagg ctttgtctat cattttatta actttgcgag ctaagtttga   1140
tcggtttggc aatatggttt ttgccgcaac aagtaggctc ccgctctatg tggccggcat   1200
tgctctatgg ttgctttccg ctcgcggata ttggtaaata gatggagaaa gaacgttcgg   1260
tgaaacgact tgtacgaccc ttttggccgt attgactata gggaatgtta cagtacaggg   1320
gcatcggttc atcccaagct ggtggtggta attaccattg accagttgag agtgatctcc   1380
tctcgttttg ccgctcacaa tatggcacag gtggatttaa tatctgctgc aggatggact   1440
tgttttttagc aacgtagact tcggattcga ggggtagacg aagcatcggc tattgcaggt   1500
atatataccg gcacctatct aatcgtcaca gtattacagg cagtactgta ttcgacagag   1560
aaaagaacag tcggtatcca ttttggaaga caaaaacttc ttaggcaatt atacatcgaa   1620
catctgtctc ctctcaagct cacttccggc actatcggcg atgaacacgg agtgcaacgg   1680
atggaaggag caaggtttat gcgatagcac cgaatccgta gcagcaatcg tagctgcagg   1740
tcagtctgga aatggtgcat tctgctcgaa gatcgtaagg ggatgtgggc tacgactacc   1800
tactacaaag at                                                       1812
```

(2) INFORMATION FOR SEQ ID NO:359

    (i) SEQUENCE CHARACTERISTICS:

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...691

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:360

```
gccgtgctcg tccatttcga cctcgcacag gccgaggtcc ttcatctctt ggccaaatga      60
cgcagcagca ccaattgctt gtccgtcgag gggaaagtgt agaggattcg tcgctttgcg     120
tatcgaagcc tacatatcgg agaaatcctc tttcagttcc atattctttg tttcgttgtt     180
atgcttcatg tttcttcctc tgatgctgtc gacgatgaag tagagaatga tgagcgcata     240
catgcgatgg ccaaccattc ggcgcctgcc atggcgtgcc attcttgggc aaaacatcga     300
actccatgta tttgaggatc gcacttacca cacccatcaa agccctccgg cgatgaatcc     360
ggaagcgatg agcgtaccgc gttccttgcg gatttattga cagaagcgtc cttcgagcgg     420
gtgctgacga accagctgac ggtccgccga tgaggagagg tgtatttagt tgtaacggga     480
taaacatacc agtgcaaaag gcagtgcggg cacgcctata ctcgtcagga tcagagccat     540
atagctccta cgccatagag aatccaaggc gtattaccgc cttccatcgc ggcttgatca     600
cggctgccat cgcattggcc tgcggagcca ccagagctga tcgcccgtaa agccataggt     660
cttgttcagg atcatcatca caccgggggg a                                    691
```

(2) INFORMATION FOR SEQ ID NO:361

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1057 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1057

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:361

```
agattaataa ttgctggtga ttacttcagg attatcttgt tcgttgcaga tcgggaaata      60
ctacagcagg cttgaacacn tgggcttcct ccatcgggat ccaggcatat gccatgatga     120
tgatgatgtc gcccggatga acgatgcggc agctgctcca ttgagacaga ttacccccga     180
acctcttttg cccggttggt ataggtctcc aagcgtgctc cgttgttgtt gtccacgatt     240
tggacttctc tccggcgatg atgttggcag catccatcag atcttcatcg atgggatgct     300
acccacatag ttgaggttgg cctccgtaat ggttacgcgg tgttttttgga ttttaatact     360
tcgacgtaca tgttgttttc caattctcta tatttttacg attgcaaagt aacttaaaat     420
cgctgtaata ttcgcataaa acggcagttt aacgcaattg ggcttgatta ttaaggacat     480
acggcgcaaa tgcagaaaat ccgccacctg ccacgaggca gtaatatgcg gattattgca     540
cagaaaggtt ttcaaatcgt tacccgaaag caaggtaatc acctccgtaa agaggagaaa     600
aacagcggtt ttccgtgcat ccgttgctgt tgctctatgc tctatatttt gcatagcagg     660
gttaggctct ttcatgttta attttgaacc aaaaagaaaa gacaatggca agaagcacat     720
tcaaggtgct gttcttgtga atggcagcaa ggagaaagaa ggtatcgtcc ccatcatggg     780
acggttacaa tcaacggcac ggtggctcag ttcagttgca agcgcaccat cccaaggagt     840
```

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...691

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:360

```
gccgtgctcg tccatttcga cctcgcacag gccgaggtcc ttcatctctt ggccaaatga      60
cgcagcagca ccaattgctt gtccgtcgag gggaaagtgt agaggattcg tcgctttgcg     120
tatcgaagcc tacatatcgg agaaatcctc tttcagttcc atattctttg tttcgttgtt     180
atgcttcatg tttcttcctc tgatgctgtc gacgatgaag tagagaatga tgagcgcata     240
catgcgatgg ccaaccattc ggcgcctgcc atggcgtgcc attcttgggc aaaacatcga     300
actccatgta tttgaggatc gcacttacca cacccatcaa agccctccgg cgatgaatcc     360
ggaagcgatg agcgtaccgc gttccttgcg gatttattga cagaagcgtc cttcgagcgg     420
gtgctgacga accagctgac ggtccgccga tgaggagagg tgtatttagt tgtaacggga     480
taaacatacc agtgcaaaag gcagtgcggg cacgcctata ctcgtcagga tcagagccat     540
atagctccta cgccatagag aatccaaggc gtattaccgc cttccatcgc ggcttgatca     600
cggctgccat cgcattggcc tgcggagcca ccagagctga tcgcccgtaa agccataggt     660
cttgttcagg atcatcatca caccgggggg a                                     691
```


(2) INFORMATION FOR SEQ ID NO:361

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1057 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1057

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:361

```
agattaataa ttgctggtga ttacttcagg attatcttgt tcgttgcaga tcgggaaata      60
ctacagcagg cttgaacacn tgggcttcct ccatcgggat ccaggcatat gccatgatga     120
tgatgatgtc gcccggatga acgatgcggc agctgctcca ttgagacaga ttaccccga     180
acctcttttg cccggttggt ataggtctcc aagcgtgctc cgttgttgtt gtccacgatt     240
tggacttctc tccggcgatg atgttggcag catccatcag atcttcatcg atgggatgct     300
acccacatag ttgaggttgg cctccgtaat ggttacgcgg tgtttttgga ttttaatact     360
tcgacgtaca tgttgttttc caattctcta tattttacg attgcaaagt aacttaaat     420
cgctgtaata ttcgcataaa acggcagttt aacgcaattg ggcttgatta ttaaggacat     480
acggcgcaaa tgcagaaaat ccgccacctg ccacgaggca gtaatatgcg gattattgca     540
cagaaaggtt ttcaaatcgt tacccgaaag caaggtaatc acctccgtaa agaggagaaa     600
aacagcggtt ttccgtgcat ccgttgctgt tgctctatgc tctatatttt gcatagcagg     660
gttaggctct ttcatgttta attttgaacc aaaaagaaaa gacaatggca agaagcacat     720
tcaaggtgct gttcttgtga atggcagcaa ggagaaagaa ggtatcgtcc ccatcatggg     780
acggttacaa tcaacggcac ggtggctcag ttcagttgca agcgcaccat cccaaggagt     840·
```

```
ttcagaaatc gtgccgttcg gcaatttttgg ctgtcaccgt cttggggaca gactaccgta    300
gcctttccac gtaagcctgt cggccgctat gccacgactc gtgggtaatc caccacggat    360
ttggctctgc ggtcagatag tccgaggttg tagcatcggg gcctttcctg tcggcatgcg    420
aacccaattc gatccgaata tccgattgtc cgtgaggata cgaaatcagt tcgtccaagc    480
tcttcatgct ttcgggcgaa                                                 500
```

(2) INFORMATION FOR SEQ ID NO:353

  (i) SEQUENCE CHARACTERISTICS:
   (A) LENGTH: 570 base pairs
   (B) TYPE: nucleic acid
   (C) STRANDEDNESS: double
   (D) TOPOLOGY: circular

  (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: UNKNOWN

  (vi) ORIGINAL SOURCE:
   (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

  (ix) FEATURE:
   (A) NAME/KEY: misc_feature
   (B) LOCATION 1...570

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:353

```
agaagataaa gacttcggcc catgccaaag aattggcaga gaagtttgca agaaagaagg    60
ccgtcagccg cgtatcatga tcgccaaaat ggggcaggcg ggcatgaccg tggtgccaaa   120
gtggtcgcta ccggctatgc cgactgcgat tcgacgtcga tatggggcct ctgttccaaa   180
caccggaaga agccgccgtc aagctgtgga aaacgacgtc cacgtgatgg gcgtttcctc   240
tctggagccg gtcacaagac gctgatccct caggtaatag cagagctgga gaagtcggcc   300
gtccggatat tctggtgaca gccggaggtg ttataccggc gcagattacg acttcctcta   360
tcaggccggt gtcgctgcca tcttcggccc cgtacccccg tggcctactc ggcagccaaa   420
gtgcttgaga ttcttttgga aaataatctc tactctcgat aaggagtatt tcagcattct   480
ctgtatggcc ctcatatgat tcctcgaaag ggagtcgtat gagtggcttt tttatgttca   540
agtcattagt gtcctaaaag tttcttcttg                                     570
```

(2) INFORMATION FOR SEQ ID NO:354

  (i) SEQUENCE CHARACTERISTICS:
   (A) LENGTH: 453 base pairs
   (B) TYPE: nucleic acid
   (C) STRANDEDNESS: double
   (D) TOPOLOGY: circular

  (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: UNKNOWN

  (vi) ORIGINAL SOURCE:
   (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

  (ix) FEATURE:
   (A) NAME/KEY: misc_feature
   (B) LOCATION 1...453

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
     (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
     (A) NAME/KEY: misc_feature
     (B) LOCATION 1...659

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:363

```
ggcttggaga gccgtttcga agagatttcc acgcttatca cggatccggc gtaatcgcgg      60
acatgaagcg tttcacgaag ttgagcaagg agtatcgcat ctggaaaaga tccatacggc     120
cgggcgcgac tatcgcaatc tgctcgcaac atcgaggaag caaagcatac catggccaaa     180
gagagcgacg aggagtgcgc gagatggctc gcgagatgct ggccgaggct aacgaacgct     240
tgccctttg gaggaggaga tcaagatgct actcattccg gccaatccgg aggagacaag      300
aatgccatcg tggaaattcg cggaggaacg gggggcgatg aggtgcactt tttgccggcg     360
acctctaccg catgtacgtc aagtattgcg aggcaaaggc tggcaggtgg aggtcaccga     420
cctgagcgaa ggagctacgg gggttacaaa gagatcgtct tctcggtcaa gggggaagga     480
gtgtatggta cctgaaatat gagagcggtg tgcaccgtgt ccagcgcgta cctgcgacca     540
gacacagggg cgcatacata cctcggcagc taccgtggct gtcttgccga agccgaagaa     600
gtggacgtgg agatcaatcc ggcagacatc gagatgctga cgttccgttc aggcggtgc     659
```

(2) INFORMATION FOR SEQ ID NO:364

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1298 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1298

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:364

```
ggaaattggg atgaagcact tgccttgaag cttgncagca acggcgaggc agatggaagg      60
aacgtgtgat catagacggt cgccgcaagg atatccagat tactatctgg taagagacgc     120
cgaagcaaac gccattcgca aggagtgaaa cgcatgcacc atctggtatt ggatcatggt     180
tacaagcgag tgctgaggac gattactgga tcgatcgacc gaaaaatgca ccctttttca     240
gttctctttt tacgatgttt tcttccgcca tgaggagaag ctgaaacgtg ccccaaacca     300
acgaaagagg gcgtcaaagt cgtcatgcag ctatatgctc cattgttcac cccgaccaga     360
agatctgtat gacgggcaat agtcctgctc ttgcaactgg tcagtggagc aagcccgtgc     420
catgcaccat ttgggaaagg ggaatggtct atcacgctag agaaggatga attacctcca     480
cttttggaat taagtttttc attgccggac aagacgactg ctccgacatc cgttgggaaa     540
gggagaaaac agatcttacc gattcgaaga gacggatgcc tatggtgcgt ctatttggcc     600
ggtctctgtt ccgcgaggg tgattatatg ccacgcttgc cggcaccgtc atccccctat      660
tcggactgcg cacccacaag gattgggcat aggagacttc ggtgcactnc gccgtatggt     720
ggactgggcg gcaataccgg ccagcgcatt atacagctcc tgcccatcaa cgacaccact     780
tacaacgctc ctatcgcgac tcctatccat ataatatagt atcggtcatc gcctccatcc     840
tatctatgcc gatttggatg cgctaccacg actgaagaat aggttctgat ggcaaaaatg     900
```

ggattc aatgatgcag tgcagcca

INFORMATION FOR SEQ ID NO:358

 (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 1812 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...1812

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:358

```
aataat acaaagtact ctcatattgg taattcacaa tggcaaaaaa tatctaagca      60
gaaagt atcggccgga ctattctccg ccatcttgtt gtcttattgg ccagcggact     120
gccaat gcacagacag ttagcacgag acgaaagatc aaggtctgca gatgagcctc     180
tctctt ctcctttaca gaagcggtat acactcgcta cggtcatgtc gcattcagga     240
catccc gtacaaggga cggatattgc ttacaattat ggcatgttcg attaaacgaa     300
atttca tgcttcgatt tgtacgaggc gaaacggatt attccgttga agctctttat     360
cctatt atgtggaaga ataccttcgg agggaagagg aatcgtggaa ttagtattga     420
cacaca ggaagagatc gaaaagctga gaggtatttg gcatggaata ttcgccccga     480
aaacga accgctataa tatctttat gacaactgtg ctacccgcct tatcgagata     540
agaaac cacaggagct accttgcaaa tccctcatga gggtgaggga gaaagtggag     600
ctgatc gatgaatgct gtaccgatgc cccttggtca agttcggcat cgatctggct     660
gggcga aaacagatac ctatgcaatc cggaggagca gttattcctg ccgaatagaa     720
ggatct gctacacgta ccactctact ctatcccaat ggtcgatcaa cgccactcat     780
atacca aagagtggtt tccggctaag ccggccagta tggaacctgc ggagagggct     840
tacacc tttattggct tctatagctt tgctgatagt tttattgcag tagctgtttg     900
gttcgt cgcaaggata tatgctatgt aatgactcta tcttattagc cattatgggg     960
cgggat gtgttatttt attctgtcat ttttctcaga acatccgcat accaacccga    1020
caatct ttcctgcttc atccccttca tctgcttatc gggttgcctc tgactgtgta    1080
tctttc accgagcagg ctttgtctat cattttatta actttgcgag ctaagtttga    1140
tttggc aatatggttt ttgccgcaac aagtaggctc ccgctctatg tggccggcat    1200
ctatgg ttgctttccg ctcgcggata ttggtaaata gatggagaaa gaacgttcgg    1260
acgact tgtacgaccc ttttggccgt attgactata gggaatgtta cagtacaggg    1320
cggttc atcccaagct ggtggtggta attaccattg accagttgag agtgatctcc    1380
gttttg ccgctcacaa tatggcacag gtggatttaa tatctgctgc aggatggact    1440
tttagc aacgtagact tcggattcga ggggtagacg aagcatcggc tattgcaggt    1500
ataccg gcacctatct aatcgtcaca gtattacagg cagtactgta ttcgacagag    1560
gaacag tcggtatcca ttttggaaga caaaaacttc ttaggcaatt atacatcgaa    1620
tgtctc ctctcaagct cacttccggc actatcggcg atgaacacgg agtgcaacgg    1680
aaggag caaggtttat gcgatagcac cgaatccgta gcagcaatcg tagctgcagg    1740
tctgga aatggtgcat ctgctcgaa gatcgtaagg ggatgtgggc tacgactacc    1800
acaaag at                                                        1812
```

INFORMATION FOR SEQ ID NO:359

 (i) SEQUENCE CHARACTERISTICS:

(ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...354

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:366

```
gagttgatct cctttggacg agacgtctcg gattcctgc cggaggggtt gtcctcgatt        60
aagaaaatca aaacaaaaag ccttgcagtt cagacttcgc aaggcttttt tgtgtccaaa       120
attcagccgg tggtacatta tcgggtctct atgagaggaa aaaagagtga ttccgaaagt       180
agtgactctc tcaatatcat acgccaaaaa agttttcaac aacgaagatg agtttggaat       240
gattcaaata agcatctgta gagaggagaa aagccgaggt aaaagtgcag ggaaaggaac       300
tggcatagat cgaaattcca cttaaaacca agccgtacaa cgactggata taaa            354
```


(2) INFORMATION FOR SEQ ID NO:367

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 686 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...686

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:367

```
tccccggggtt ggattgattt ggtttcgagt atcccgatga taaatttttg cggtttggtc       60
gagtttttag attgattcgt ctattccgaa ttttgagact tttcgcacca caaaggaatt       120
tgttacctat gtttttagaa tcaaagccag ggcgcattta cttcagccac gattttagcc       180
atcttattga tcatttctct tccatagcga ttcttcaagt cgaaaatgcg tcgaccagca       240
atatccaaca gcggaagatg ctatttggtg gtcttacgtt acgatcacaa ctgtggctat       300
ggagacaaat accccgtaac aaccgaagga agaatcattg caagtttttg atgactgcag       360
gagtagggct tttcggaact tttacagcct atttgcttcc ttatttgtct cagataacaa       420
aaaagaagaa acagaaacaa agaatgattg tcaatcttat tgctgctgtt gcctgatatt       480
gagcagaata cagctgatac cgcttccact taattccact catgaactct attatcaaaa       540
gatggttgta cagcgaaagg ggcaaattgt attcttttcc gattggagag atagattgac       600
accaatgcat tgtttagatt ctaatctgtt ttgaaggata agattcccga ttaaatacat       660
tggcagtgct aaaaaaacaa atccct                                             686
```


(2) INFORMATION FOR SEQ ID NO:368

```
tgtgggatgt gaaaggcaac agggcgaaag gcaagagcag ggagccatcg ccaccaacct      900
ctcgctcgac aacatcaagg cgcaaatcat cagcactatc agcgtctttc cgaccgcgag      960
gcgttcgtca cggcggagat gtgcgcaatg cctatcaggg gctgggcagt gagtacgata     1020
ccctgctgag cgttcgacag ggaatgcgcc tctctgc                              1057
```

(2) INFORMATION FOR SEQ ID NO:362

     (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1118 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1118

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:362

```
ccaaagacct ttatggcgat ggcagaaggc gatccggaag accacactta cgccaaaaac       60
cactccttgc caccacccag gcagccatcc tctcgggcta ccaatccggt ctcaaagagt      120
gtctgaccga aatggcaaca ctctatccgg cagggaatgg caagagtatt ccacgggcca      180
agcagtcgct tcccttctga accggcttgg tatcatctcc gacctttggc gacaaatcga      240
aggaacagac aagaagagaa caaaatgctc atttccgatg ctccgtctct attgacagga      300
tcatcgacgg gagcgagacc cctttcgtct atgacaaaat cgggtacgca tcgaacacga      360
aatgatcgat gaatttcaag ataccagccg ctacagtacg aaaacttcaa gccctgctg      420
tccgagagtc tggctcacgg cagtacaacc tcctcgtcgg cgatgccaaa cagagtatat      480
accgcttccg aatgccgacc ggcgtctgct cacagaggtc gtcagtcggg attttgccga      540
acatcggaga gggtcaatct accatataat tggcgaagca ctcccgaata atcgagttca      600
acaactccct ctacaagcat ctgccacaaa tccttctgtg aggctatgac tcgcgaagcc      660
gagacgatgg caatgcccga tcctaattgc cggaggagat caaccgtaca ttcatgcaga      720
cctatgccga tgtgggcagc ttgtgccacc ggctaaagta gaccggcatg gaagcgtctg      780
cattatcttc cgtcgccggc atcatcagaa gaagcggaag ccaatctttc gtggaggagc      840
agatcttgca ggatcttccc cgttttatca tcggtctgca aaaagagggt atgctccttc      900
ggatattgct attctcgtgc gcaaaactta taggctcgcg agatagctcg tgccatgctc      960
tcttatcaac ccgaaccgga gaagaggact atccccttat cccgatgtcg gacgaatctt     1020
tgtcgctgat ggagcagcat caattcgttt tctatcgaac ctactcaagt ttatatccgc     1080
ccccaatccg atgctttgcg acagatcgcc tacctgtc                            1118
```

(2) INFORMATION FOR SEQ ID NO:363

     (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 659 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:369

```
tgtaacccgg ccttccgaat ccgaccaagt aagatgttgc catcggggcc gtcgaagggt       60
acccactttt cggtcctggt tcgggcttgt cttccgtata gttggagcag tggtctcggg      120
ttggcgtcgc tgctccccga tactcggtga ggtgggacag aggactgtga tggagcaacg      180
gatggctgct ctttggcgga gccggccggg gagataccga tccgctcacc acgggatttg      240
cgtgcgtgct ccatgggtcg gaggcggagc agtcagtccc ttgctaaata aagcgcgata      300
ttcatcagcg acaactccaa caacagacgc ttgccattgc tctgcgatac tgctggtcac      360
aggcattcag tatcttgagc gattggtata agaagaagtc gggcaacgtg ctgccatatc      420
cacatatcgc tgtatgacta ctcggactgc tccaacagcg gcaaggtaga agcgtcctga      480
gccatcatca atcgcggaag aaagaagcca atccgctcac gatcacctgt ccgtcgaatc      540
cttggcaagc aattcgtcca acacgatcaa tacggatcgg taatcccctg taaaaagaaa      600
tccgtcagac ggaaataata atcgtagtcg aggatatcag attctctatc gtattggcat      660
aggtaatatt gccttccgaa aaacggcaat gcggtcgaag agcgaaagag catcgcgcat      720
ccctccatcg gctttgtcgc tattatagcc aaagcttcgg cttcggcttt tatcccctcg      780
ctgttgctac gtagcgcaaa tgttgctcta ttcgggcccg tggtattcgt ttgagtcgaa      840
tatctgacca gcgcgagaga atagtgggca ggatctttgt gctctctgtg gtagccaata      900
taaagatcac ataagaaggc gggtctt                                         927
```

(2) INFORMATION FOR SEQ ID NO:370

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 420 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...420

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:370

```
ggcaaagtcc atcttcaccc actccggtcc catatgtctg aaacgtcgaa ccccatgttc       60
gccttaagtt gcccaaagat cgcctcgggt tcaatacacg tcgcttgcgg tgcacaagac      120
cttactccga gttgagccga tccttagctg cgctttgtag ttgttgagac gatgattcac      180
ttcgatgatc ctattaccat agcctgtctc tctgctaatt cccgaatctt ttatggatga      240
tattttctga ccacagtaca cgtctgactc atcgatccga accaaaaatg caccatttta      300
gttcgaattt tctgaaaaaa tggaacgaga ttttttttcgt tgtgcgtgag aattttttgc      360
tttccgcgcc aaaccaaaaa agttcccacg cctggttttt aggaagtgtc aaaacgggaa      420
```

(2) INFORMATION FOR SEQ ID NO:371

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1341 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

```
(i) SEQUENCE CHARACTERISTICS:
      (A) LENGTH: 1119 base pairs
      (B) TYPE: nucleic acid
      (C) STRANDEDNESS: double
      (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
      (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
      (A) NAME/KEY: misc_feature
      (B) LOCATION 1...1119

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:368
```

```
caagttgttg cacgatgcct atgcaaaagc tttagagctt cgnaagttgg ttccggacag      60
gaggtcgaaa atgtcgttaa gactatctat aagcctttac ggccgagaga tttcagccaa     120
gatggtagag ctattgaagc cggaagggtg cgtgccaagg tggagatcgt atatcaaagt     180
ttggaaggct tgcatcggcg ataccgaatc atccgggaga ctggtatttc tccggcgatt     240
atccgcaccc ggaggcgctc atttggtaaa tgaagctttt atcagctaca tggagaggac     300
tatggcaaat aattatttcc agaatcgaaa gagtattaag aactatgaga gagcaaagaa     360
aagcgacatt gatattggac gatggtagcc gttcgaaggc tattctttcg gttgcgaacg     420
tgctgtggcc ggagaggtcg tttcaatacg gctatgaccg gctatgtgga gagtctgacg     480
gatccgagtt tcgcggacaa atcatggtta tgacctatcc tttggtgggt aattatggct     540
tccgatgaaa gcagctgagc caaacggcgt atcttgcttt atggaaagga cagaatacac     600
atggaaggaa tcgttgtgtc cgactattcc cattctttag tcattggaat gctgtcgaaa     660
gccttggcga ttggctcaaa cgtgagaggt attcggtctg acggggatcg acacgagggc     720
attggccaag cacctcgcga acacggttcg atgaaaggaa agataattct cgaaggaggc     780
gaagcattgg cttcgccgat ccttacacag tcaatcaggt agcggaggct tctgtcgtga     840
agtaatcgtc tacggcactg gaagcaaaaa ggtggtactc gtgattgtgg agtgaaggac     900
aacattattc gctcgcttct ccgtgaagat aaacgctcta ccgtgtacca tgggattacg     960
actttcatcg aatagcatac acggtctctt catcagcaac ggcccgggcg accccaatat    1020
gtgcagcgta cagtggaaca tattcgtcgg gctgtggccg gcgacaaacc tatctgcgta    1080
tttgcatggg caatcagctt ttggcgaaag ctgccgggg                           1119
```

```
(2) INFORMATION FOR SEQ ID NO:369

      (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 927 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...927
```

```
ggcaaagctg gaggagctat ctgcatctct cccgatcgtt gaggggctgc ttcgttgatg      60
cgcaaattca aggagcaagg tattcgctct gccattattc gggaggattc cgactttatt     120
cgcacaacat caaagagcgg tacggctcga ctacatctgc acatcggagg cagaggtgga     180
aaatggcctg ctgacagtcg tctatcgggt accatagtgg atgcgaaggt caaagccgaa     240
tttctcgctc cctggccaag gagctatccc tcacccctgc cgaaataatt gccgaggcga     300
tggagccaat gatgtaccca tgcttgactt ctcggccggc agctcatatt caacagttcg     360
gcacatccgc cttccatgcc tcaactacgc atgaagccat tctccaattc atgggttgcc     420
gatagtcgcc gacccgatcc gatagaataa gaacctccgt gctaagagaa atttatcgta     480
cggaggtatg tttttggcgg aaatatattt actttgggat agaagagtag acccataaga     540
gcttgaatac gatgcgatcg tatccgaagg gcatgcgaaa tatagatcgg aaaggtgccc     600
gtattctttg gttttgcgag cttctttttt gactttccgt ggagttttc ccctgatgta     660
tggccgaaga ggaagcattc gtgcctttca gggcataggg acaaaatttt taagaataca     720
attatcagat ttatccaatg aaagtaggtt tgttcatccc ctgttatgtc aatgcagtgt     780
atccgaagtg ggtatcgcca cgtacaaact gctgaagagt ttggacatag atgcgactac     840
ccgatggatc agacatgttg cggccagcc                                       869
```

(2) INFORMATION FOR SEQ ID NO:373

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 703 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...703

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:373

```
gtcgttactg tttgcaggat actctcccta tcgtatctct ctattgatta gagtgcgttc      60
cgagaatgag tttaatctat ttttcgtggg gcaagataga attttttcaat tccagcagtc     120
tttcccctct tctttctgcc tttcagccga gagcctcgaa acaggcaaaa ggataaagga     180
tgcgcgacga agtatcctac aaagttccag aaaatgatca ccgtcgggac tgcatatcga     240
atagcgaccc tgtgcgctta taacggatca gacgagcaaa aagataaagg gtacgaacaa     300
aggaccgaaa gcaacgacgt aggccacagg gtgcctatcc cccaataaag cattgtcata     360
gacaaacagc aagaggagat agcacgtcca taaacggtat ttgctccata aaggtggtga     420
cagccacatt gcgaacgaca gcatgaaaga gcgaatctgc tcacagcgga gcacgtgtcg     480
ttgtacccaa tgaagagatt gcatcccgta cgggagctga gcagatagcc aatcatcacg     540
ccaaggaacc ctcaccggat ggcataatga atatgcaaga gaagaaaaaa accgtgaatt     600
tgtagtttgt gactaagaga cttcccggcc tttctacttc gctctgtccg aatgcccatg     660
aaccactctg ctacagccgg atggcctagg cagggatgaa ttc                       703
```

(2) INFORMATION FOR SEQ ID NO:374

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 647 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
     (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
     (A) NAME/KEY: misc_feature
     (B) LOCATION 1...1341

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:371

```
ccaaatgaat tcatatatga atttctccaa ctatttctat ttctcttcag gttcagtaaa      60
tatcttctat gcaaaaggcg tattttagtt cgcaaagtac tcatttataa taagaaaggc     120
aaataaaacg gcaagaaaac gcctcttcga gcataaaaat gtcgcaagag gtgtatgtgg     180
taatcagggt acataaacag ggcaaactcc acctttcgtc gtttgacgag acctctgagg     240
actttccctt gtatcggcag aaagagacaa attcacgata gaaattcctg tcgccgactc     300
tatcttccgc aacagtcggc tcttgggatg cttgccgtat ccggcaacct gcctgtcccg     360
acattgtagg aaaggacggc aagcagaaga acgttccatt taaaacatct gaagataggg     420
atttacaata gcttcctaaa ttcatctccg ccaatctgtt gatttcatcc ttgtagattt     480
caaggtgatg aggatgatgt tctccacata gataccgatg gtcatatccc tgtttctcac     540
gacatgacta tctccgccaa cgtgtcttgc aactctttgg caatatagtg gtcttgcgat     600
ttttcaaggt gttgcgacag atgaaaagcg actcatatca cctttatcag cctttcgcct     660
ttctcttctt gggactcttg aaaaatcttt gacattggtt cttcatttgg acgttccgat     720
tcaacacact gctctctaat tgagagcgtt ttatttcgct ctcatttctt ttcatgggaa     780
tacctgtgaa acaagttccc ggatggcaac aggatctacc ttgccgtttt ggtctctgtc     840
atactttctt aatttttatt attacacaat tcattgttca ttcgttgcca gtatatttac     900
cgatgaagat gaatacatcc gctatcgaag aatgcccaat aatcggcttg taccagtagg     960
gctacatcct ttcattcata cctttctgtn ggagatgttc attagtgtcc atcaatacaa    1020
tcgttcgatg tatctgcctt cgcacattcc cacgttcgag tgnaaagaat caanggactg    1080
ttctttgaca tacaccctcg cctatatcgc tcatcgaaac gtgatgtatc gaagacacat    1140
accatcaccg acatattcga cagtgcaaat atatggtcgg tgatgctgta atcagcgtga    1200
tttcctttag tgcgtacttg tggcacgatt tggataattg tggcttcgtt ctacctaata    1260
gctttgggta caaggatcgt aactttgcag taagcgataa gtcggtattt catggcttgg    1320
gaacatacat ttcgagagaa t                                              1341
```

(2) INFORMATION FOR SEQ ID NO:372

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 869 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...869

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:372

```
      (vi) ORIGINAL SOURCE:
           (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
           (A) NAME/KEY: misc_feature
           (B) LOCATION 1...574

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:377

ggctgtgttg tccggctgtc ctgtcttttt gaatttgacc atgatgaaga ttccggtcgc      60
ttctccggtg tggagagtgt ccatttgtta tagtaagata gaaatggata gaattggcag     120
gtgccgactc tgcaatatca agatattcga tgtcttatag gatgcagcag ctgggatctc     180
ttgagcttct gtggtaggaa ccccttcgtt accgaattgc gaaactttgc ctgtatattt     240
ccgacacttc atatccttgc acattgatgg tgggttttat catgcgaatc tttgtgccac     300
tcgtttgagt ttataatccc ccaacagttt cccttctgtc gtaccatatt gatctgctta     360
ttgccatgag caagcattac gaaatcggca gggctgtcgt agaagagact tcaatagatt     420
tctctaccac aaattgagaa acgcagcttc tgtggccgga gcattgaaat cgagattggc     480
cactacatag tgctgaagtt gttgttgcca ttgaatagtg gtcgcatttg ctctttgacg     540
gaatgatata ngccccttca tggatttgat agtc                                 574


(2) INFORMATION FOR SEQ ID NO:378

      (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 384 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: double
           (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
           (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
           (A) NAME/KEY: misc_feature
           (B) LOCATION 1...384

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:378

gggaaggcgt aatgaagaaa gaaattcttt cagcagatta caaaggcgag ttgttcgtca      60
ttctgtagct gattatgtca aagccgaaga cttcgctgaa acattattga gcgtcatata     120
gaagcaagca aatccaacct caaggctcac ccattgtcgt tgccggtggc tacggagtcg     180
gaagcaagga aaatttgccc tcttgcatga tcttgcatct gtattgggtg gagaagttgg     240
agctttcgtg ctgcggtaga tgctggtttt gccgatcatg acatgcaaat cggaagacag     300
gcattaccgt tcgtcccaag ctctatatcg cttgcggngt cagggacaaa tccagcacat     360
cgccggtatg ccaggganag ctct                                            384


(2) INFORMATION FOR SEQ ID NO:379

      (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 1134 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: double
           (D) TOPOLOGY: circular
```

```
     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...647

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:374

agatcccttt gaatcattga gactctcttt gaaaggtcca ctctagaggt ccccagccca       60
aatatttatt gttctgtcca gaaattggaa gagatgaaac aatcctttat gtactaaatg      120
acaagatata tgtttacaga gttgcacaat gaaagaatac gagttgagcg attattttaa      180
acacttccct cgttgaattg tagtatacct caaaggaggg gattgttcga ggttgcgcta      240
ttttggactt tatatgtttt tactctgcct caaaaaaaaa agaatcaggt ggtttggtgc      300
tgcagtcgta tacgaaagct agaagttgaa taccacgcag gaataacgaa aaaatcaaaa      360
acaacacaaa aaaacagaat cggggactag agcgggggca tagggaatgg ttattttccc      420
actcatgggg atttcctgcg caaaagctat atctttgnaa atggaaccaa tcagcgtgga      480
aggatttgta tgcttgcaac ccacgagaaa aaaatgctaa aacatttctt cttagaaagt      540
ctttcgacag ctattctcca atgggagtgt gcaagccctt ctgtgcgagg aagtttacca      600
attaaaagca taaagatatg agctatctat tcacattgaa atcggtg                   647


(2) INFORMATION FOR SEQ ID NO:375

       (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 486 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...486

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:375

ccccgggaat aggcggattt tcgccggcta tcgtactgta tctgctgatg ctatcgtagc       60
caagcgtaca ggctgcgagc agaagtgaag ctaaaatctg ctccgctctc ctttcctctc      120
ttcttcatca caaccaaaaa gcaccatata atatggaact aataggcact tttttctta      180
tcctgctaat ctattggtaa tccgatttct gattcggatg ttcgccattc gtcagatgtt      240
tttcgacaga agaagaactc ttcacgacaa ggaacagaaa cctcaaaaaa ccctctccgg      300
gtgaaaaagt cgaactcgac gaacttgaaa agcgaaaatt tgaaaagacc aaggagaata      360
ccgtagactt cgaagacata aaggacaaga gcgatgcang aaccggatgg atccatatat      420
tcagcagact cggatccttt tctccgatat caccctgtcc gcttggatac cggatccgac      480
atataa                                                                 486
```

```
tggacgaagc ccgccacaag catccgtgat gctgtcccaa tcgtctgcac agatagagaa        240
atcaaccgcg acatcaaaga ggcacaagcc gaaagggaga aaacgcggag agcagacagg        300
agctgaacga cttcagggaa acgatcaaca aagaagagat cgaaaagaag agcgaatcaa        360
tcgggagata gagaaaataa aacggaggaa aaacggaagc aggagaaagc agcaagccgt        420
tcggccgaaa cacctgtaca gcaaagctgc aagaagtgcc ccaaccccct gtcatacaag        480
tgggcgatac gtacgaatca aaggacagac ggctataggc agtattatag atatgaatgt        540
cgggaggcta ccattgctct cggaatgatc aaaacgactg tgccgatcat cggttggaac        600
cggccaagcc cgtcaaggag cggaagtctg agcctgttcc ggggcatctg cccgaatgat        660
catagaccgg atccacgaga agcgttggat ttcaagcaag acatcgattt gcgtggcatg        720
cgtgtgaacg aagcctccaa gccgtcatgt attttatcga tgatgccatc caactgggaa        780
tacccgcgta cggatacttc atggaacggg aacaggtgca ctcagaacgg tgacagggag        840
tatttggcca cagtcaatgg cgtaaggcat tttgcagacg aaacgtccag ttcggaggag        900
ccggcatcac tgtcgttgaa ttgggatgat actttcgata cgatcccaaa tggctgaaat        960
catctgc                                                                  967
```

(2) INFORMATION FOR SEQ ID NO:381

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 494 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...494

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:381

```
aggatccccg cccacaggcc gtatttgctt acttgtattt ataatcatca gacaatccta         60
ccatataagt gaacagcgaa ttagtaattg acgttaagcc aaagaggtat ctatggccgt        120
cctggaggat ggcaaactcg tggagctcaa cgcgaaccgc gcaatctttc ttttgcagtg        180
ggggatattt acctcgtaaa gtgaagaagg tgatgcccgg tctgaacgct gctttcgtgg        240
atgtagatac aagaaggacg catttcttca ttatcttgat ttgggcttga ctttgatgct        300
cagcagaaga tgatggagat gatgacaaaa agcaaatcga ttcatccttg tccaaagtgc        360
ccctcggcag cgacctccct aaagagggga agtcgcagat gtgctcaagg ccggacagca        420
gatcttggtg cagatagcca agagccgatc tctaccaaag gcccacgcct gactgccgag        480
ctttcttttg ggcc                                                          494
```

(2) INFORMATION FOR SEQ ID NO:382

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 637 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

```
       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...574

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:377


ggctgtgttg tccggctgtc ctgtcttttt gaatttgacc atgatgaaga ttccggtcgc      60
ttctccggtg tggagagtgt ccatttgtta tagtaagata gaaatggata gaattggcag     120
gtgccgactc tgcaatatca agatattcga tgtcttatag gatgcagcag ctgggatctc     180
ttgagcttct gtggtaggaa ccccttcgtt accgaattgc gaaactttgc ctgtatattt     240
ccgacacttc atatccttgc acattgatgg tgggttttat catgcgaatc tttgtgccac     300
tcgtttgagt ttataatccc ccaacagttt cccttctgtc gtaccatatt gatctgctta     360
ttgccatgag caagcattac gaaatcggca gggctgtcgt agaagagact tcaatagatt     420
tctctaccac aaattgagaa acgcagcttc tgtggccgga gcattgaaat cgagattggc     480
cactacatag tgctgaagtt gttgttgcca ttgaatagtg gtcgcatttg ctctttgacg     540
gaatgatata ngccccttca tggatttgat agtc                                 574



(2) INFORMATION FOR SEQ ID NO:378


       (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 384 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular


      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...384

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:378


gggaaggcgt aatgaagaaa gaaattcttt cagcagatta caaaggcgag ttgttcgtca      60
ttctgtagct gattatgtca aagccgaaga cttcgctgaa acattattga gcgtcatata     120
gaagcaagca aatccaacct caaggctcac ccattgtcgt tgccggtggc tacggagtcg     180
gaagcaagga aaatttgccc tcttgcatga tcttgcatct gtattgggtg gagaagttgg     240
agctttcgtg ctgcggtaga tgctggtttt gccgatcatg acatgcaaat cggaagacag     300
gcattaccgt tcgtcccaag ctctatatcg cttgcggngt cagggacaaa tccagcacat     360
cgccggtatg ccaggganag ctct                                            384



(2) INFORMATION FOR SEQ ID NO:379


       (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1134 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular
```

```
ctcccgataa agaaaacacg agcggcaaga ccaaaaaaac ggaactgaaa aatccgaaat    960
agtcgttcgg tgatcaaaaa ttctcgctcg tctttttttc gcttttggtt cgagatttgg   1020
aaaaaagaca accgtaaatc cgaaatcatg gcgcgagttt ttcccgattt ttcgttcgtt   1080
tttgtctgtt gcgactgctc tatcagtagc cgataacaga ttttatccaa atgggtattc   1140
ggagttttgt atcg                                                     1154
```

(2) INFORMATION FOR SEQ ID NO:384

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1169 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1169

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:384

```
ttcgccactt gacatcacgc gtaatcgaag gattatcact cttacgggca tcttgtctat     60
ctcatcgata aagacaatcc ctctctcggc ctgtttgaat cgtagtctgc ggcctgcaaa    120
agtctggtga gaatactctc aatgtctccc ccacatagcc ggcttcggtc agtaccgtag    180
cgtcgactac ggcgaaggaa catggagcat tttggctatc gtacgagcca agagtgtctt    240
gccggtcccg tgggaccgac cataataata ttgcttttct cgatctctac gccacgctgt    300
cctcttgctg gagcaatcgt ttgtaatgat tgtatacagc gacgaaagaa aacgtttggc    360
atcatcctgc ccgataacat acgaatcgag aattccttga tctctatagg ccgaggcaag    420
tcctctctct tcagattgtt ctctcttccg atttgaattt ttgcaatgct tctcgaacca    480
cctctcctgc cggagagcac attcatcgca gatatgagca tggactcctt cgagcatcag    540
tttacctgcg ttctcggcat gccacaaaaa ctacagtatt cttcgtcctt ttctttgcca    600
tgagaaatat acagtccccc tttgggtaac gagagggtac tttcgattct tttcgaggat    660
tttatctatc atcccgtact ccaatgttcg ggggctgtca tccaatagtc ccgatcacta    720
tcttttcga cctgccgacg ggctttccac tgtgagaaga gataatcgtg taaagctctt    780
tcttacgcgc agaatctcgc gagctgcgat ctccaaatcg ctggcctgcc cctcatacca    840
ccaagcggct gatgtatcat cacgcgggaa tgaggcaaag caagcgtttg cctttcgttc    900
ctgctacgag cagcactgat gccatagacg cgccatgccc gtacagatag tggccacatc    960
gcaccctata tactgcatcg atcgtatatg ccataaccgg cataaacaga tccgccgggt   1020
gaattcagaa gatggaaata tctttaccgg ggtcggcgct atcaagataa agaagctggc   1080
ttgaatgaca ttggccgtgt aatcgtcgat ctgagtgcca aggaagagat ccgatccatc   1140
attagacgtg agaacacatc catttgtgc                                     1169
```

(2) INFORMATION FOR SEQ ID NO:385

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2717 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

```
tggacgaagc ccgccacaag catccgtgat gctgtcccaa tcgtctgcac agatagagaa      240
atcaaccgcg acatcaaaga ggcacaagcc gaaagggaga aaacgcggag agcagacagg      300
agctgaacga cttcagggaa acgatcaaca aagaagagat cgaaaagaag agcgaatcaa      360
tcgggagata gagaaaataa aacggaggaa aaacggaagc aggagaaagc agcaagccgt      420
tcggccgaaa cacctgtaca gcaaagctgc aagaagtgcc ccaacccct gtcatacaag      480
tgggcgatac gtacgaatca aaggacagac ggctataggc agtattatag atatgaatgt      540
cgggaggcta ccattgctct cggaatgatc aaaacgactg tgccgatcat cggttggaac      600
cggccaagcc cgtcaaggag cggaagtctg agcctgttcc ggggcatctg cccgaatgat      660
catagaccgg atccacgaga agcgttggat ttcaagcaag acatcgattt gcgtggcatg      720
cgtgtgaacg aagcctccaa gccgtcatgt attttatcga tgatgccatc caactgggaa      780
tacccgcgta cggatacttc atggaacggg aacaggtgca ctcagaacgg tgacagggag      840
tatttggcca cagtcaatgg cgtaaggcat tttgcagacg aaacgtccag ttcggaggag      900
ccggcatcac tgtcgttgaa ttgggatgat actttcgata cgatcccaaa tggctgaaat      960
catctgc                                                                967
```

(2) INFORMATION FOR SEQ ID NO:381

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 494 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...494

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:381

```
aggatccccg cccacaggcc gtatttgctt acttgtattt ataatcatca gacaatccta       60
ccatataagt gaacagcgaa ttagtaattg acgttaagcc aaagaggtat ctatggccgt      120
cctggaggat ggcaaactcg tggagctcaa cgcgaaccgc gcaatctttc ttttgcagtg      180
ggggatattt acctcgtaaa gtgaagaagg tgatgcccgg tctgaacgct gctttcgtgg      240
atgtagatac aagaaggacg catttcttca ttatcttgat ttgggcttga cttttgatgct      300
cagcagaaga tgatggagat gatgacaaaa agcaaatcga ttcatccttg tccaaagtgc      360
ccctcggcag cgacctccct aaagagggga agtcgcagat gtgctcaagg ccggacagca      420
gatcttggtg cagatagcca agagccgatc tctaccaaag gcccacgcct gactgccgag      480
ctttctttttg ggcc                                                        494
```

(2) INFORMATION FOR SEQ ID NO:382

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 637 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

```
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 522 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...522

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:386
```

ggccaaatcc	tgctgtacga	tcttttcatt	tttcgcagcc	agttcggccg	aagagacgaa	60
atttcgtttt	gctgcttttc	caccagctcc	atcagcttcg	gacgttatac	tccagcttcg	120
aaagatcgag	ttcctcttct	ccggtcaaga	ataatccttt	tccttacaaa	agtaaattat	180
ccgcgccaaa	ctggcactaa	ttttgtgtac	ttgtataaag	agtaaataag	acagtcatta	240
cggagaaaaa	gatttggtta	tttttgtctt	cacagaaagg	ctgctctgca	taatgcttct	300
ctatattcaa	ggagccggta	atgaattgaa	aaagagaaga	ttgatagaat	tgcaaaacat	360
agaaatgcta	ccactcatga	cccaccgcct	caatcaatcg	gaatatcctc	ttcgatcgga	420
tatgctgcag	cgatagacct	catcccggtc	gggattgtag	agaacgaatc	catcagatat	480
gcaaatcata	atcgaccgat	agcatcatag	cataggacaa	gc		522

```
(2) INFORMATION FOR SEQ ID NO:387

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 399 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...399

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:387
```

ggcataaacc	tccagcatcc	gtctggcttc	ttcttcggct	tcctcttttt	agcatgagcc	60
gtatgccctt	cttgccaaag	gaattcggct	gtccggagaa	aagacgtgta	cgcatttccc	120
atcgaactac	attggcccac	tgattgcgag	gataggcaga	tcacggtggc	tttgtatcca	180
gttcttatat	gtattcaaat	gatggtctcc	gatgtcggac	gtacgatcag	ctcttcttcc	240
aacttgcttg	cggatccact	actacgccgt	ctccatcggg	attggctttg	agccatagtg	300
agttaccacg	gcgcattcct	tagcaaagcc	ttccacatgt	nctcttcacg	gctcaggang	360

(iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...2717

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:385

ggcgcatgtt tttataccaa tggatagtac aagcagggat gattcggtat cgtgccagta   60
gaattacaga tcctttccat gcgattcttc atgcttatcg tatgctgatc ggacacaaag   120
aagatgaagg ggggcactta gaggataaag ggaggggatt tgttagggcg gatttcaaaa   180
aaataagggc tatctccgac agcccttact tccttattaa ccttaaaatc taataccatg   240
aaaaaactgt acaaaaataa ggcgatgtat ttctcgtgca actatattag gccaaaaggc   300
gcatattagt ccaatcaata tttgttttcg gccttatact cttttttctc ccatattcga   360
acggggatca tacgccagaa agcgaccagt aacgatagcg ccagtcgaaa gtcagcagtc   420
tttttcgacg gatgacagcc ttactattgc ttgggcaact atcttggact ccatcagcat   480
tggatactta cgtctcgtag caggggggta tcgacaaatc cgggacgaat ctccgtaacg   540
tcaggtgtag gctgtctgtc gtggccaatt ggcgtatgga ttggagatgt gcatttggaa   600
gcgtttggtg gcggagtagg caggagcgga tcccattctc ttgttgctgc taccgaactg   660
atggctacta tttgaccctt tttccgaggc gaaaatagcg gtaggcggca ccgatcattc   720
gggtaaatcc ttctcattgg tacggaggGt gtccagctct ttcgtttcgt ccagttgcgg   780
attgtataac cgataccgga cgagtggaag tatacatcca taccgctcat ttctcgatga   840
ggtgggacag ccgttcagga gcatcggaat gcgtgatgtc tatacggctg tataaacctg   900
tgagggattc tcctgcttca atgcatcgag ctttgggtat tgcggccggc aacacctacg   960
aaccaaccgc gagagataaa aggcgggcta catcaagccc gatgccagag gtggctccta   1020
cgacaacgat cgtttggctt ccatgatttc ctgttatgaa atgaagtcca tcccacgaga   1080
attttcgctt cttctgtcgt agctcctacg acagtgaaag ccttcattca cgtgggtgcg   1140
ggtaggcttt gcgttgttct tcgaatgtct tcggcgtgcc cttagcgatc gatccggtac   1200
gagcggatcg aaggtatgca gcaaaccctt tcgatacgat ggtcggggaa gagcgacaga   1260
tctatgatgg gatggtcggt gggggagggg ctaaagtatg cagcagggga aattccagtc   1320
cgatacttcc gtaatggctt caaggcacat tctggctcca ttggcttttc cgctgcagag   1380
aatcctgcta tgtgaggagt cgcgatgtct gccaaatcca aaggctgagg tctatatcgg   1440
gttctccttc ccagcaatct attacgaggg ttggagccat ccgcttttga cagcccgaat   1500
aagagcttgg gtatccgctc ggctcctcgg caggcattga tcaggatagg ccttttgtct   1560
gcacagctcg tagaaaagcc tcaccgatga ggtgataggt ggcgtgaggg tcttcatggt   1620
gaggggaacg tggaatgaga taatgtcgca ctgctccacc agtcggttag aggaagaaag   1680
ctattgtcct gctctgcctc cgaccgaggt ggatccagag caggaactcc atgccatagg   1740
cggaggccaa acgcttcagc tcacgcctac atggcctaca cccactatac ccattacctt   1800
ctctttcagg gaaaaccctc gcgcaaagcc agacgacaca ggcagcacat tacatactgc   1860
gcacggccgt agcattgcag ccggggggaat tgcgccagag gataccgtgg cttcgcagta   1920
ttcgcggtcg atgtggtcga atccggccgt ggcagtcgtt tcaaccgcac atcagtacct   1980
tgcagaagag ccggtgtgca cttggtgatc tgcggacgat cagcacccgg gcatgacgta   2040
tcgtatcggg agagaagcgt ccgagtgtag gtaagtaatg tccgcaacag gatcgacaat   2100
acctctcaat agggcacgga tgcttctgcc actattttga gaggaccgga tagagagaaa   2160
gcatttctta ggcttcgcct tttattttgg ttgggaatgt aaatgggcat ccgatacgcg   2220
ttgctcggtg tggatctcgc cgtgttccac ttcgagcgat ggatattgtc cgagagagtg   2280
gtcaaaagtc ttttggcatt gtcggagtca ggatgatgcg attttggact cgtgcggtgt   2340
cacgattcgg aacatacgga tgaagtccaa gacaaattcg ctcggagagt gcatcacgat   2400
aagagattgc agtagttgcc ctgagctatt tcttcgggca gttcgatgtt attgttttgc   2460
tttcgttttc catttgttct tgaatgtttt aataagtaga tgagggaaag tgccaagctg   2520
aataacgtat ggcaccgtta ccccctttga acaaagttac tcctttcgtc taaatgtgaa   2580
taagggttca cgtgccagag tgaaattatt gcggttcgaa ttacggataa tgctctttttc   2640
ccatccgtac aaatataccc tgtacgaaat acgctctttt tgccgaggca tacttgtaca   2700
gggtaagtaa gcatgtc   2717

(2) INFORMATION FOR SEQ ID NO:386

        (vi) ORIGINAL SOURCE:
              (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION 1...346

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:389

cgccttagag aaagtgtcca tcgctaaggc ggtgccaaat taccattttc gaacaccgag   60
ccaaaaaagt ctctaatacg gtgccaatca caactttgat actagagaaa aagctcggca   120
aataggctat cgactcatcc gaaaaattgc ataacaatcg caagctccga aagccttatg   180
gcgaaccaac aaaaacaaga cagccacctc gtttgcaaag cgaacaaagt ggctgtccta   240
tatgttgcag ggctatggaa accccttatc ctcanagaac gggaatcgac gaagcngccg   300
ggctataatc tgcgtcttcn aagtgtactt ctctgtgaac gttcan   346

(2) INFORMATION FOR SEQ ID NO:390

        (i) SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 474 base pairs
              (B) TYPE: nucleic acid
              (C) STRANDEDNESS: double
              (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

       (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
              (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION 1...474

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:390

tgatgtccgt gatgatgtgc ctcatgttca tgtttgtgct ccgagcaacg gcgtgggcgt   60
gagattgttt tgtttccata gatttgtctc ctacacatat gatctgatgt ttttgttttg   120
acggcgtgtc ataatgagca atttgctcgt tgcctgcgac attcggcttc agtcacgtac   180
ttcagtacgt tcctttagac tctgtttttag caccttttgtg ctccaaaaga attttgacac   240
tgctcatctt tattgcaaat gtcatcattt tgtcgacatt tttaccatat atttgccgtt   300
tcaaaaagta taacccttga tttcaggaaa ttcatcatgc ggctaaagat cgagaaatga   360
gccgagaatt cggtttggag gtaattaatc ggcagcctac ggtgtccttt ctgtcgtgga   420
ttcggacggt gcaccctatg cttgcctctt ttcatcgtgc gcgatgggga gaat   474

(2) INFORMATION FOR SEQ ID NO:391

        (i) SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 514 base pairs
              (B) TYPE: nucleic acid
              (C) STRANDEDNESS: double
              (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

       (iii) HYPOTHETICAL: NO

(vi) ORIGINAL SOURCE:
      (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
      (A) NAME/KEY: misc_feature
      (B) LOCATION 1...346

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:389

```
cgccttagag aaagtgtcca tcgctaaggc ggtgccaaat taccattttc gaacaccgag      60
ccaaaaaagt ctctaatacg gtgccaatca caactttgat actagagaaa aagctcggca     120
aataggctat cgactcatcc gaaaaattgc ataacaatcg caagctccga aagccttatg     180
gcgaaccaac aaaaacaaga cagccacctc gtttgcaaag cgaacaaagt ggctgtccta     240
tatgttgcag ggctatggaa accccttatc ctcanagaac gggaatcgac gaagcngccg     300
ggctataatc tgcgtcttcn aagtgtactt ctctgtgaac gttcan                    346
```


(2) INFORMATION FOR SEQ ID NO:390

      (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 474 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...474

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:390

```
tgatgtccgt gatgatgtgc ctcatgttca tgtttgtgct ccgagcaacg gcgtgggcgt      60
gagattgttt tgtttccata gatttgtctc ctacacatat gatctgatgt ttttgttttg     120
acggcgtgtc ataatgagca atttgctcgt tgcctgcgac attcggcttc agtcacgtac     180
ttcagtacgt tcctttagac tctgtttag caccttgtg ctccaaaaga attttgacac     240
tgctcatctt tattgcaaat gtcatcattt tgtcgacatt tttaccatat atttgccgtt     300
tcaaaaagta taacccttga tttcaggaaa ttcatcatgc ggctaaagat cgagaaatga     360
gccgagaatt cggtttggag gtaattaatc ggcagcctac ggtgtccttt ctgtcgtgga     420
ttcggacggt gcaccctatg cttgcctctt ttcatcgtgc gcgatgggga gaat           474
```


(2) INFORMATION FOR SEQ ID NO:391

      (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 514 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

```
caggtcaagg tcgcaacgaa gtatgtttgg gatctcgctc tcaaatcgca ttctgcgtaa    1080
tcgccaatat cagttctgca tcgatgagaa gatgagccgt cgctacaacc cgaccgctac    1140
tatgccatcc agaacatgcg cagcggtacg cgcaactgat cccctctgg ctcttcggat      1200
tcctgtacta aaaaacagg acaacaactg tgaaagccga tcggggcgtt cggcttgtcc      1260
tcactttgct ctgatcctta gtgagcagac aaagaatatg gacaaagccg atgcatccgc    1320
aacaccgact ctgtttcagg gttgctattt cagaatacaa gaccgaaatt atactttta     1380
taactaaaaa ccaaaatggc taaagaaaaa aaattcctaa ctgtgacggg aaccaagccg    1440
ctgcgcatat tgcttatatg ttcagcgaag ggctgccatt tatccgatta caccttcgtc    1500
tacaatggct gagtatgtga cgattgggct gctgccggcc gtaaaaacat tttcggcgaa    1560
acggtaaggt ccaggagatg caaagtgaag ccggtgcagc cggtgcagtt cacggctgtt    1620
gcagggagga gcactaacca caacctttac ggcatcacag ggcctatgct catgattccg    1680
aatatgtaca aattgcggga gagttgcta                                      1709
```

(2) INFORMATION FOR SEQ ID NO:393

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 463 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...463

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:393

```
gaaataacat ttccaaatgg agaactgatt aaggacaaaa agatccggag gaagattata    60
agatgaaatt caagaatcta atttatactg ttccagaaac agaaagcacc tatcttacca    120
aacaaaatct ttcgatacaa aaaagaagat gagcctatgc aaagatgagg atcatgattt    180
gtgcgaagat gatacgacga acatcgaaag cggatacacg gtggcgtaca ccacagaggc    240
tccgtacctt tgagctggct attcacatag tcgagagcca tcggattggc cgtattccgc    300
atatcatacc ggctgtgcca tcgtacctgt tgcggagcaa cttatagaag cccaaccgac    360
caatagcgta ggaagcatcg taatcaaaaa gccgctccga cccaaagcag accgtcccca    420
tggataatgg tatcaaagaa atggctcact ggccaatcca gtc                      463
```

(2) INFORMATION FOR SEQ ID NO:394

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 632 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:

```
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...632

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:394

gcattacccc ctttcagaaa aaagtactcg ctcggataga taaccgacca tcgaaataac        60
ctccgacatt caattgatag aacagtgacg atgccggtaa aagacaagcc gctgctgtat       120
gctcaaatcg aggtggtgga aacgtgctcg gacttacgcc ccatcccgaa agctccgcga       180
taagagagag aaaggacgga gcacgtatgc cctcaccctc acgaatgaga aatccatccg       240
ccgtaaacgg taataaggac gcggattgaa tgtcatctta gctcgtactt ccagaatcgg       300
tgatgaggaa ctatgcgagg aagatcggga tcggcattgc tgaattcaga atatcggtaa       360
tactgccacc gaagagactc cacgtctctc cagcggcaaa ggattgcgct cggccagcat       420
cacgcttgtc tccacattga gttgggcaat aggtcgatac tattggtcag acggacaaat       480
ttatcatcgt gcgagttgtc gggccttgtc cgttgagcag ctccatcatc agatcggtcg       540
ttggtctatt ctttcgcgcg tgctgtacaa atcgaaagag cgatgtccgc ggataattgc       600
aaaagccctc tttgcggagg agaatagtac ag                                     632


(2) INFORMATION FOR SEQ ID NO:395

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 784 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...784

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:395

tgcgaatatg aacaaagaaa tcacttttga taagctaccc gaagcggtac gtatctgacc        60
gaacaggtct ccgccattaa agaaatggta tcagcattca ccctcctgtg cctgaagaaa       120
aatctctcat aggcatagac gaagcgtcgt aattattcag aaagctaaac ctaccatcta       180
tgctttggta cgcaaggaat tgtccctgca tataagcgtg gcaagaaact ctacttctac       240
aaagagagtt actacaatgg gtagagtctg gacgaaaggg tgcaactaca gccaatcatn       300
tgaggagcaa ctggccatga tgcgtcaaga ggtgcgtcgt aaacgaaatc tatcaagtaa       360
cgatgggcca tggaagaaga agctatcgtt ccgaagtcct tcttgacaaa gcaatagagt       420
tgggcttgtc gttcacgggt tgacctttcc tatcagcata tttccctctg agatacgaaa       480
catcattgca aggtacatga gtgccaaggt tttcccatcg attacatcgc ctctgccatc       540
ttgtggcaat tgctgtgggg ataggaaata ctcatcttgc cgaactcaac gcggctggca       600
ggaaagtacg atgctctatg tcgcattggt cggacgtcag ggacaaataa gagtcatccg       660
ctaagctttg cgatgaagcc ttttctgatt ttgactatca ggaaaacaaa ctatacgaac       720
gctcctatgc cgaattgaca acatcatgcg tatgaatcgt aaggagcgaa tagagggagg       780
cttc                                                                    784


(2) INFORMATION FOR SEQ ID NO:396
```

(i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 984 base pairs
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: double
             (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...984

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:396

tggaaaacgg gattctatcg catcgccgta ggagccggag tgcctattcg ctcgctgtga   60
tcgactatag ctataaagaa atgagcgtat tcgagctgtc acccctacgg gcaatgaaga   120
agcggatatt gcctacatca gaagtcgtac agggcatcac aggcacggca cccccgaaac   180
tttgcagaat cagaaaatga tcaaacacga gagctctcag ccattgagag ttgctgtagc   240
tcaatccgga tagactggga ggataagcac gccaatctac gccgaatgga gcgttggccg   300
aagaaacagc cggtatggcg gatgtcctct tctttcccga aatatgacta cgggcttttc   360
gatgaacgta caagctctgg cggagccttt cgagagggcg aaactatcat gaagcctgaa   420
gagagtgact gctcgtcatg gttggctctg tcggctacga tggccgtacg ggagaacggg   480
aaattctata tcgtgcctat ttcgtgacac cggaaggaga ggtcttccat caggacaagg   540
gcacctcttc cgtgtagggg gagagcatga ggtgatgact ccggcacaga acgccggatc   600
ttcaactatc gcggttggaa gatcttcatc attccctcta tgatctgcgt tttcccgtct   660
ggtgtaccaa tacggatctg gaatacatct gctcgtctgc atggccaact ggcctgagcc   720
gcgtcgcgcc gtctgcaaac gctactccaa gctcgtgcca tggagaacta tgcctatgtg   780
tgcgcatcaa tcgggtgggg gaggacggta tcggtctgcg ctatacgggc gatcggctat   840
cctttcgcct cggggcgagt atcttgccac ttgtgcccga agagaggaaa aggtggctgt   900
accatacgct cgataagggg gcgatgcaac gtttcgcgac aagtccctgc gtggatggat   960
atggactctt cgtcatcaac atga   984

(2) INFORMATION FOR SEQ ID NO:397

        (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 600 base pairs
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: double
             (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...600

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:397

```
ggaagcagtt ggaggacatg cagggataag ggctgtggaa atgatgaaat ccgctttgac      60
aagcggcttg atgagaacac gatgaaggtg tattgtatga ttatcatatt attgaaaaag     120
tactcatcaa ttcatcagaa atttcatact ccgacttcgg tgggaaacgg cagtggcatt     180
acaggcggaa acggaaaggc agaacacgct gatataagca gtagaaaagg tagtcacggc     240
aagcctgcat tctgtatttc caagtatgca gggggttcag acattcgggt gcagccaagt     300
atgccttcgg agaaacaagt ccaatcggca gcaccgatgg agagccgtgg ggacttcaga     360
atacaaggga aagaagtggc tggggcaaat gccacgtggt aagcacggta cggatatttt     420
caaaagagaa aataccgtag ccattagggg attttnctca cgcttcactc cgtgtccgnt     480
gaaaatctcc aataagccaa cggggttgca cccctctgga caccctgcc gagcctgttg       540
catgaaggaa cgggcaagct gaaacaagtt tcattttccc tctcaccgta aaatcaggaa
600
```

(2) INFORMATION FOR SEQ ID NO:398

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 556 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...556

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:398

```
gggaacaagc gagttctcat cacgggagca acgggcttca tcggcggctt ctggtcgatg      60
aagccctgcg ccgtcaatat gaagtgtggg cggctgtggt ccccacagcg atcgctcacg     120
cctgacagac agccggatcc gatttgtgag atcgactacc gcgacccgtc cgatattgct     180
cgcttggctg ataagaagct cccgaaggtg aatncgcatg gcacttggtt atccacaacg     240
ccggttaacc aaagctcgtg acacctcgct tttnagagag atcaatgcag agcaaccaag     300
cgttttctga taggattaca aggggcgaag cactgccccg aacctttgtc ctgatgagca     360
gtatgggtag ctatggagct cctnccgacg acgccaacca ctttcctcct cttccgtacc     420
caaacctacg actgcctatg ggagagcaag ttgctggcgg agcaatatgt gcaaaccttt     480
gtnacaatac ctataccata atacaaccca caggagtcta tggacctcat gaccaagaca     540
tctgatggca atccgc                                                     556
```

(2) INFORMATION FOR SEQ ID NO:399

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1078 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:399

```
cggccttcgg gaatcgcctt actcattccc cggtaaaacg ctccgcctga agaggatgac    60
cggccggtaa agtggcagtc gtatcctgcg caagggcttc gctccgatag tcgtaagcag   120
gacagccgat aaagtccatt ttttcatatc gtcgatagat tgattgtttt actttgtctg   180
tactaaaaag agtcggaccc gcctttgagc gtcactttta cggtgcggag tttcttttgc   240
aggagtgact cgctccctgc atcaccccgc gggccgcttc ggaaaggatc tggttttggc   300
ggaggaagca aaggtgaacg aagtcccgac cgttcctccc atatggctcc cacttctttc   360
agcgcggaga cctcttccga tccgggaata aaactccttc ctgtccgtcc gtatcgaagg   420
cggagagctg aacggaaacg accgtccgcc atactcgata ctcgtgatat gaagcttcat   480
ccggttgccg cgattcgggc ctgtgccatc agtcgggtat gacggggaat ggaaaggtct   540
gcaggcgagc ggactccagc agacggagtt gtacgaagtc tccatgctca gggtggttgt   600
cctgtccacg accacccgca acgtattacg ggtgacgacg atgccggcac gtcggcagac   660
cggaaaccga agtttcgctc cttatccgt actcggcgat aaaagccgaa tcgctcatgg   720
gctgatccag agacgaacga ttgctttctt ctccggaaga agctccacag cgggtaaagc   780
cgccgttctg ctgtcaccgc tgtcttgggt gcgggagcat cggccgggcg ttctgactcc   840
gggtgtatgc atcccgggaa tttgcatcac cggaggccgg gagtatttgg ctgccatccg   900
gtaagatttt tcgagcagtt cgagatgatc gtctcctcct ctttttcctc cttgagagtt   960
gcgagttcgg agcgtatcat tccagctctt ccgcagggct tctttctcat agtcgtatgc  1020
ccggtggctg tagaatgaat gtaccatctg cgacgtttct tcataccggc ttaccgac    1078
```

(2) INFORMATION FOR SEQ ID NO:400

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:400

```
ccttcagcag caaatcgaag ttcggagcag agaaaagcac cttgccggca tcgcatcgtc    60
aaagtttttcc aatgccgact ttacatccgc ttcggaatgt tgatcccctc tttgactttg   120
aagatctgaa tcgggaagat gggtactcac catgccccaa accttcctcc gtggcacgta   180
acaactcctc catcacattc gaccttcggg cgaagtatca gtgccgtaat tgatggaact   240
gaataaacct gattgcctcc acgagagtgc atcgtattca agttgtggat gaagcttcca   300
tagcctgatg cgtatcctta cgcgtctttc ggaaaactgt ggcagagcga tctccacctc   360
tgtactcgaa aaagggaaag acgccgcaca tcgtccctca tata                     404
```

(2) INFORMATION FOR SEQ ID NO:401

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 427 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...427

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:401

```
cggatnaagc cgccgattag gattaacgcc gaagactgca aagcaaaatc gaattaacgg      60
ctcccggctg ccaacccatt tccgggacag gccactgttt tctgtttgct gcttttttcc     120
gtactttgaa ctgtattttg gaacaaaaat attccgttgg catncaacta aagaattttc     180
atcataaata tcccgtctct tccacctgat tttgatgact ttggcttcag ggcttatcct     240
catggtatct tgttcggact ggatatttac acgagacacg acagctctat cgtgtgccgg     300
agttgcgtgg caaagacttg aaggangcag ancgtttgct gtcaaccata atcttcgcta     360
caaacttgtc gattccgttt atgacaaatc ctggctccgg gtgtcntant nnaaatggtt     420
ccncaga                                                               427
```


(2) INFORMATION FOR SEQ ID NO:402

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 451 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...451

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:402

```
gacaacaatc cgtacgaaga gagattcgaa gttgatgtag atggagccag ctcaccgtat      60
tcccggccaa aaaaggtcag gaaatagtgg gttacgctta gaaagctata cagacaaggg     120
ctttagcggt aagttcactg tgatgtagga ttcgatatgg atggcaaaat ccacgacttc     180
tccgtgctca gccacacgaa acacccggtc tgggagccaa gatgcaagag tggttccgaa     240
cgccgccaaa aaagaaggac tgatccaaga tgtacgtggt gtacagatga gtgaactcct     300
ctgactgttt ccaaagacgg cggtcaagtg gatgctatca cagcgcgacg atcagtagcc     360
```

```
cgagcctttt tggatgcaat ggatcgtgcc taagaggttt caaagccgct caaggcagtg        420
cccggacagg ctcaggagtc ttcgaggcag c                                        451
```

(2) INFORMATION FOR SEQ ID NO:403

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 458 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...458

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:403

```
taaaaggact cttaagggac gactaaatat gcttttcaat acgcccatgt ctttctctat         60
tgtttcccaa gaatgaagct tatatttccc tgaaaacgat cttggacatc ttcaaacaaa        120
tacttctgat tagctttgag gctaagatat agtcggcctc tgattgaata atcacttcag        180
caatagctgt ttgtatccca ttgcatcaat actaacaact gatccactta aatcaagact        240
atccgtactt cgggaatagc ttgtaattca ttgtgtttgt ctgtaactgt ctctgacaag        300
acttaagctc acttgatcaa tccatgccga gagtatatat gtaacccagt cttctttggg        360
agctacgcaa acgcttgcca tctatggcaa tagtttaccc tctaaatcgc taatcaagtc        420
ttttccataa acactgagac agcgtaaaga gcaatgan                                458
```

(2) INFORMATION FOR SEQ ID NO:404

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 650 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...650

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:404

```
agagtttatc atcaacctgc aaacctgaca ctctccatta tcctttgcgc aataatgaga         60
tagccattct tgccactacc gaaatatcat ttgagaaaca catatcgcct gacaaaactt        120
```

```
atccatattg ccagttgatt ctcaatatat agctctcagt gtccgagagc atttgtagaa      180
gttccttttt cgttatattt atctctattt atcttcattc gtatcggata atatttgctc      240
ataaatcaac accctaatgt caaacatata atacattcag aaaactttgt gtttacttac      300
aaactaaatt ggttttgaca aggaggttta tatctccttg tgaagacagt tatattattt      360
ctttgtattt atcatactta ttcccagtgt ttatacacat tctctaaaca ttgacgaaca      420
aaattgaggt tctcatgcga gagtttaact ctgagaagag cagctgttga aaaccttgaa      480
taatctcatt cttaaagggc cattttgaa tatattaatg aatatatttt ttatctcaac       540
tcttttgat tagtatcaag ttgtgtttgt acaatcatat ccactaattt acacatggca       600
tagcagaaac catactggat attttctaag caattagata ataattatct                 650
```


(2) INFORMATION FOR SEQ ID NO:405

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 908 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...908

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:405

```
tgctcaacaa agcagccaaa gctcgtatcg accagtatac caaaactgcg gtatcggtta       60
cgaattgcta tataccgagc taaccattta tttctcagtg gacgtgtctg ctcattcaac      120
gacaagcaag tgcatagcgt actggaggtt caggcgtcaa acgcaagtct tttgcaggag      180
ctaccgagtg gtattctgcg acttagcaac cgtcaagcgt gccatctcag ccatcaagga      240
gggcaggata gcttgggggc aagcgaagtg acgctatctg acaaccccat tatttgcgtc      300
ctgagcagaa agaagccatc gagcgcacgc tcaagcagtt ccgaaaggaa ataagatgct      360
gtggaatgcc aagatgcgtt ttggcaaaac gcctgtgccc tgcgtgttgc caaagagatg      420
gaagctgtgc gtacgattat ctcacgcatc gcccggtggt agatgccagc tggtttgagg      480
actttggtaa accttctacg accgtcctga gtggcactat ggctcccgta gcaaaggtgg      540
agcttcgctt ctctcgaaaa gcttgcttcc caagggaaaa agtgtgtcat tttgcctcta      600
tgcaagatat gcgtggttcg aaggacgtag gaggtaattt gacaaaaaca acgaagtctt      660
ctctacttca tgggatttag tgattgggac gaggcacacg aagggacaca gaccgagctg      720
gggaaaagcc gtattggtca gttgatgggt aaggatacaa aggcatttac atctatcggg      780
aacacttata acctcttcga tcagcacaaa gaggaggaaa gtctttacgt gggctatgtc      840
atgggaacaa caagccaaaa tcgattgggg aantcaatca tctggcgaca cttaccccct      900
atgcctta                                                              908
```


(2) INFORMATION FOR SEQ ID NO:406

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1323 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1323

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:406

```
cggtgccggt atcggttgga cgatggcaca agcgtgtcaa gatgatacaa tgcctcagat      60
ggtgcccttg cttaacggtg tcggaggggc tgcntccgtc tcgtggggat tttgtctctc     120
gcagctatag gaatcaatcc gaataataca cggctgccga ctatccgatc ttttcgcaag     180
ctaccggtat gctggcctga ctgtcggtat gattaccctc ataggtagcc ttatcgccgc     240
cggtagctac acaaactact gcctcagaga ccggtgatat ggcctaacca ctcgtgttta     300
cctctttgct actgatcctg accgtgggat tcgtggtgct cggtctgttt ctatcgaagg     360
gtttcccctc ttctgggcta tcatcggagg acgttttctt cctctctctt cggtttgttc     420
ttctctatcc gtgtcggtgg acggatatgc ctattaccat ttcgctactg aactcccta     480
gcggtgtggc ggagccattg ccggtatggc tgtgggcgat attctactcg tagccgtaga     540
ggtattgtcg gtgccagtgg tctgttgctg acgcagatta tgtgccgccc atgaaccgca     600
agctcatgtc cattctgatg gcttcgggag caaaagcaca cctgccgcta caacgccgac     660
tactgcttca aaacaagaaa aaggagggtt gccgctcctg ctcctgccaa agcagagaag     720
acagccggta gcgtatgcgc gatgccaagc gagtcatcat cgtacccggt tacggtatgg     780
cattgctcag gcacagcacc aagtaagaca gctggccgat aaacttacgg ctacggtacg     840
gaagttcgct atgccatcca tccggtggcg ggtcgtatgc ccgacacatg aacgtgcttc     900
tgtgcgaagc cgatgtgccc tatgaccaac tttcgagatg gatgccatca acggagactt     960
cgctcagacg gatgccgtgg agtaatcggt gccaacgacg taatgaaccc tgctgctcgc    1020
aatgctgagg tacgcctata tacggtatgc ccgtgctgaa cgtggacgat gctcccgagt    1080
aatcatttgc aacttcgacc tgaaacccgg ttacgcaggt gtggacatcc gctctataca    1140
cgagcaacgg gtgtattcct caaactcgga gatgccagga atctctggca gagatcatga    1200
aggaaatgga tgccacaggc gatacgcagc tactgctgct cctgccaaag cagagaagac    1260
agccggtagc gtacgcgcga tgccaagcga gtcatcatcg tacccggtta cggtatggca    1320
ttg                                                                  1323
                                                                     1323
```

(2) INFORMATION FOR SEQ ID NO:407

       (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 529 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...529

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:407

```
agaggctcta cctttcatg ctacagactt ttctgccact cctgctgata cttttgccat      60
```

```
ctgttggttt gtggttttga tgcagtttct gtggaaattg tggacgacat ggtcggcaaa    120
ggactgagtg ccatcatctt gtccaagtgc ttttctacgc agccatgacc ttggttccca    180
tggcactccc gctggggtcc tgttggcctc attgatgacc ttcggaaatt tgggcgaacg    240
cttggattgc tcgccatgaa gtcggccgga gtaccgctct accgcatcat gaaactcttt    300
tcttctctgt ggtagccatt gcttgcgggc ttttcatctt tcaaacgatc tgatgatcca    360
gtcccaagtg aaattctaca cgatcctgtt tttgcgagaa gggcgactcc ggaactggaa    420
attcccgaag gttctttcta catggtattc cgtgggtaca atctctttgt agccaagaaa    480
gatcgccgca gggaatgctc cacgacatga tgatctatga ccactcttc               529
```

(2) INFORMATION FOR SEQ ID NO:408

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 427 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...427

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:408

```
tgaggaaaaa cgacccaatg gagaggtaac ctgcgtaatt ctatttctag gttctacaaa     60
ttgcccgtag ccgacattgg tcttggcccc gagaccaaag tgcagataat agctttgaag    120
agctttgtcc taaagtctac cgttagttct ctccatgatc tttcaggata aagcgaaact    180
gataggttac acctggtcaa ccctcaaaaa acgtacagga ttagggtttt gcagaggatt    240
aggatgtgcg tgatatagtc ctctccaaag agagtgttat ctactcttat aggatggcat    300
cgaggaaaat gtctctgtca taaatggaat attcttttcc tacaatactt tctcaataat    360
ttcttcacgt gtaactccat tgntgagctc atatctgcaa gggaagtccc acttcttcga    420
tggcaga                                                              427
```

(2) INFORMATION FOR SEQ ID NO:409

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 992 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature

(B) LOCATION 1...992

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:409

```
ggatgccatc gacgaaagta ttatcggtag cggtatcatt cgatacgaat aagcgcacgc    60
ttcatttatc cctcgccgtt ggatggagtg gaatcttaaa ggatacggac aagacttctg   120
ccgaccttgc cataggagac attcagacaa gctgaagccg gacgtaacac ctctccccgg   180
aggaggagta tcattagctg gaaagttcct ttcttaagcc agttggtttc ccgattcgga   240
gaaagcccaa tcctgtgttc aaaacccttg gaagtgccct atgtttctgc cgcaccgcac   300
aaacccccaa tcctcccgtt ggcgtagtca ttgcagacaa gttatggccg gtacatatcc   360
cgaaaaggct gctatcgctg ccgtttatgt aagccatccg ctccggactc tactttccac   420
ctcttctcaa gagcaacaca acagaagatt gcagaaggtg acaactccct ccgattggca   480
ggccggaaca ggttgaggat caatttggat aagccgttcc cggtgaataa tgaccatatc   540
tttttgccgg tatcagaatg cctaataagt acaagctcaa tcgtgctacc gttatgtaag   600
aaatccggat aacctttct ccattaccgg taagaagttt catataacaa cggagtctct   660
ttcgaaggct acggaatacc ctcgctttgg gctatatggc tatcaaatat ctggtggtaa   720
ataccgatgc tccgagatcg atatgtcgct tgtacaggag ccttatgcta agggaacgaa   780
tgtgctccat tccccgaatt ggtcggcata tatgtctata agaacggaac attatcggca   840
cacaggatcc atccgtcaca acttattcgg tttcagacng aaagagagcg atgaatacga   900
aataaaactg ggtatataag gggatccggg ctttcgaatg ggcgttgctc aagattgaga   960
ataacaatgc tgtccgttgc tatccgtctg tt                                  992
```


(2) INFORMATION FOR SEQ ID NO:410

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2585 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...2585

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:410

```
agtgtaaaat gaaaggataa aggggataaa gggcctgctt attgcgaaag tcttcatacg    60
acaaaagcaa atcctgaaga tcgatctgcg gcgaatggga aggaagagga agggaggggc   120
ttatttgggc tgttgcccca ttgccttcga agttgtaggg gtgtattgcc gagcatcttg   180
cgacagaaag cacagagtag ctgacagagg agaagagatt cttttccgct attgccttga   240
gagacgagac ggatcggcca agtctgtgta gacatgcttg gccctttctt catgatccat   300
ttgagtggcg gacaactgaa ttcctgattg aagtgacgtt tgaagaactg agcgacagat   360
tcattttggc tgcaagctct tctgccgatc ggactccaaa tggtgtcgga atacgaaagc   420
acgaaagccc ttgttctgac atggaatgag gagagaaagt tgtctaaaag cggctttcg    480
tagcgtgagc gaagatgcag aagagttcgc gcagtttcag ctcgaatatc tcggacgaat   540
gggcatttct gacaaatatc ccatcacaga gtggagccag gagttcacat tgtctctcgt   600
tgcaaggagg agatgtgaac gatttcggtt cgtctccgca ttctttctta ttgcccgaag   660
agggacaaat gccgaggcat aaatgggcgt gggatggaaa taaaagcaaa tgagcgtagc   720
cgggccttt tcagcctaag tcttatcga agattggcag ccaaaaggac aacattatct   780
cccgcaattg cgaattaccg gattccggcc cgacaaatac ggccggctct ccttgagcag   840
gaagagcaaa gcatggctgt ctttggtcca gatttccaaa tcgctccttg tcctaccgtg   900
tggagttcgg gcaatccgga cagagcagtg gcggtcggct gttgttcagg atgccattcg   960
```

```
gattttcttt gggagagaca gctgacagat atgaatactc ataaggagga tggtcgggcg      1020
ttatctttgc aaagcgagct attatgtgac gagctgcctt gtccgaggta ttgtccgtcc      1080
gatgcttttg cggatggagt cgtatccgga caactgtgct tgtcgcttgc ggacgaagca      1140
tcaaggagcg gagacaaact tgcggccaac cttttcccgt gaacaaggct ccgaaaagtt      1200
cgggcactac agccctgccg gcaataggtt ggtcagcgaa ataaaaggcg taccaaagca      1260
atacttgaaa atcaattggt cagtcgacct cctcgaatat agtagcatac gacctgtggc      1320
gtacgatcag tgcggtttcg agcgtagccg ttcctgaagt tacgagggct gcttgctctc      1380
tcggagtatt tcatacgtgc gtccgaatac aacgggaatg cgtcgtcggg caaaaatgga      1440
gtatagtcct gtatcgtcag tccgggtgca cggctatgac agggcggtag tccgggaatt      1500
gcttcatcac acgcagcata caggcaaatt ctccttcact tcgagcaagc gacttccaca      1560
gagaagggta cttgacgaga atctttggct gaccgctctt gctcttcgat cgtaggcgca      1620
tgtgttgctt gacggcatca tagcacggat tgcctacata gatgacggaa aatcgtgtcc      1680
ggcaaaaaaa tctttctcga aaggcaagat gcagacatga gatcgacgta tttcttcaac      1740
gtcttgattc gccaggattt ccatcccaga ccttaggaga gatataatag actatcggct      1800
tgccaagctc ttccgtacaa acggaagtac gtagcgcata ttgaagcccg ggtagtccac      1860
tggatgacaa cgtcggggtt aaatgctcgc atctgctcct gcacatgttc gccgcgcggc      1920
ggatgacacc gaggtgcgtg agtaccggaa tgaagcccat aaggctactt ccctgtaatg      1980
aaagatcggt cgctctccgg tagcctcggc aagaaatccc cccccatgaa tgcaaacacg      2040
gcttccgggt catgctcttc aaggcacgaa ccagattgga tgcatgcagg tcgcccgagg      2100
cttcgccgct acgatgaaat agcgcatacg caataaagaa aatcagggaa aggggaagga      2160
gatcagacgc tcctcttgag aagttcctcc aagacaggta gataagtctc gaagtcatat      2220
tcagtttgat gggagatagt gtaacgtagc ccgctgcatc agttccaaat caccctctat      2280
ggtgccttta ttgatctgac gtctgtcatc caatacacag cattgccccg tgcatcttcg      2340
gaagccatgt atcgtcgaca aaacgaccgt ccgtaacggc gcaaggcttt agccccaaag      2400
gtttcccttc ggaacattca tgcttagcat cgtgtcctga ggcaagccat cttcaggatc      2460
atacgactga catgcacggc ataggccgtg gcatgactct atcgcaaatc tcgctatggt      2520
cgtccagcga aacggccaga gccggcactc acacacacat ccttccatcg cagcacccac      2580
cgtgc                                                                  2585
```

(2) INFORMATION FOR SEQ ID NO:411

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 440 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...440

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:411

```
cagctcctcc tgtcgctcaa aaaaaacctg cagcagcaca gtatcatcac gaaaccacga        60
acacgaacta ccggcaagag ttcgtccaac ttggcacgag atgagtggta agctttcctt       120
cgaagaatgg aaagaactgt accgccgatc gtattctggg agatagaact ggaacaagcc       180
gacagacaga tgggcgactc ctcgaaatgc agaaacagga agccaaccgt ctctttgccc       240
gattctcaca caaaactatc gggaatggat tgccaagccg gatacacgtt cgacatgagc       300
ccggatcttt tcaaacaaaa ggtattcccc ctactcgaca atgcgaaaag gtattcttca       360
tccttcatag acaacttttc ggcaggatca gtggagagcg tgaaatccat gctcagcgag       420
ttttacacct tcgaagaaga                                                   440
```

(2) INFORMATION FOR SEQ ID NO:412

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1872 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1872

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:412

```
ggtgaagatg tagtcaataa gaacttcgcc gcagtggatc gaggtggcgt gtggtagaga    60
taacggtgaa acccgaatgg gctgacctgc ccgacgatcc gtggtacgcc acgagggaga   120
cacggacttt gtccacaacg tggtacgccg atcaacgcac aagccggaga cgacctcccc   180
gtatccgctt tcctcgacgc gaagacggta catgggattc aggaacggcc gcttccgaaa   240
aacgcgtgtg gcagctttcg ttcctgtatg ggaagctgac aactgtgtac agtgaaccag   300
tgtgcctacg tttgtcctca cgctacgatt cgtccgttcg tcccaccaag gaagaagagg   360
agaaaaccgg cgtcaaggtg ctcaaggctg tcgaaaacag ttcccagaca tgggcttccg   420
cattcaggtg aacgtaatgg atgtctcggc tgtagcaact gtgtggatgt atgtccgggc   480
aataagaatg caaggctctg accatgcagc ctatcgagga gcagtacgaa gaaccaaaaa   540
actgggataa gatgatctcc ggtgtgaccg gcaaggctca cttggtggca tcgcagccaa   600
tgtgaagaac tcgcagtttg cgacgccgct ctttgagtct cgggtgcatg ttccggttgc   660
ggtgagactc cctatgtgaa gctgataccc agctctatgg agaccgccag acagtggcca   720
acgctacagg ttgttttcca tctactctgc ttcggctcct tctacacctt acacgaagaa   780
cgaggcggcg aaggcccggc atgggccaat tcattgttcg aggacaatgc agattcggtc   840
tcggtatgca cttggcatat aagaagatgc gtcgccgcct tggaatcttg cagaagaagc   900
tcagcagtct ccctgctgtt cggacgagct gaagctctct tgagagaatg ggtagaaaag   960
cgtcaggatg ctgtcgccag aaagttcttg ccgataagat caaacctctt gtcgctgcct  1020
gcgattgtgc atctgcaaga gaatcggccg tgtcgattcg ttcttcatca agcgtgcaag  1080
tggatcatag gtggagacgg ttgggcatac gatatcggtt cggtggttg gaccatgtga   1140
ttgcatccgg tatgaatgtg aatatcctcg ttctcgtaca gaggtttatt ccaatacgga  1200
ggacagtcgt ccaagagtac tccgacggag ctatagccaa gtttgccgca gccggtaagc  1260
gtatcaggaa gaaaacctcg gtatgattgc ttgctacgta tggctatgtc tatgtggcac  1320
aagatctatc ggagccaatc cggcacagac gctcaaagct atccgcgaag cgaagcctac  1380
gacgggcctt ctatcgttat cgcctactcg ccctgtatct ccacggtatc aagagcggta  1440
tgggcaagac tcaggccgaa ggcaagagag cgttgagtgt ggctactggc acctctggcg  1500
ctacaatccc gaactggaga agagggtaag aatccgttcc agatggatag caaagagccg  1560
aactggagga attcaagaac ttcctcaaag gcgaagtccg ctatgcatcg ctgtacagga  1620
attccccgag gatgccgagc aactcttcga cgctgcgttc gaaaatccca atggcgctat  1680
cgtaactaca tgcgtatgag tgcggcagac tggtcttgcc tcttggtatt caggacatca  1740
aggaagaaaa agactgcgat cactagcgta tctacgccct tataacaaaa tcgaggctgt  1800
gcagctaagg atttattctt agtggcacag cctcgattgt ttctattcct acccgtattc  1860
gtcctgctca aa                                                      1872
```

(2) INFORMATION FOR SEQ ID NO:413

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 342 base pairs

(B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...342

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:413

```
ggtcttgctg gtggatttgt tttttaagac tatacaagac gtaaaataaa aagcaccttt      60
cctcccggag aagtgctctt tttcggtatt tctatgaatc ctaccgactg cgatcgattt     120
atcactttta taatggttac atcattagac caaatggctt tggctaaaca aatgtgttac     180
tattacattg gcaaagtata gccagccatg catctccaca ataccgatta ataagtaaaa     240
ttatttgtag gctacctaac catatggcta aatggatatg actttcaaga tcttccgatg     300
tgaactaaat aagctgacag tcaaaaaagt taattcagct tt                        342
```

(2) INFORMATION FOR SEQ ID NO:414

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1300 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1300

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:414

```
tgcctttcct gactaggctc acatagtcgg ggtagagcgt aggcctgtct agcagcgaat      60
agcagcatgg gcatcatgag ctctgtgatn cagtcattcc catcagcaca tattcttggc     120
cagccgacgc atacctcgcg ttgctcgcca ctcgcncgca gctcttcctc gcgacggcgt     180
gcgtactcca ttcgacgctt actcacagca gcgacgaaan agcgggtcgt ccattcgttc     240
ttcctgctaa tgcctgcgaa aaggcaccga tggcttccgt ataatggcga gcatccacag     300
tcggagggct tgtgcatact cgcgttctgc ttcggcacgc agggtgagcc attgatgatc     360
tccaaatcat tggctcgcga ataaaaatcg atatctcacg acggacgatc acatcccgac     420
cggcaagcgg tgcacgcagc acataccttc gagcgaacga caccggctga gagctacata     480
ggcctgaccg cggcaaaggt gccttccgag aaatcgatga tcacacgatc gaacgtcagc     540
cctggctctt gtgtaccgtg atcgcccaag ccaatttgag cggatactaa cgaatcttcc     600
cagtacttcc tcctccactt tattggcttg ctcattaagg agaagcgttt attgtcccag     660
atgcatggtt ccaccgttac aacttcccgg tgctgagaca tacatctatc gtttcactct     720
```

```
cctgatcgaa accggtacta tgccgagtgt tccattgacc catcgacgat ctttgtcgtt      780
ggagcgaata tcacctgagc atcctgcttc agtgtaagtt cctcctctgt cggaaggatg      840
aggagggaaa atcgccttcg atagtgccgt acagggtgac gggtcgccct gcagctgttc      900
caattgccgc tcattgatgt aactcacgtg cggcgtttgg tggcaagtgt gatgaccggt      960
tcgtccttcg gcggctcgta tggcgattga cacatttatt gatgtcctga agatcctgtt     1020
cggtaagccg cccgatcgga ttcgatcgag tatctgcacg aatgcttgct ctgtctgtga     1080
tacaccttgg tcagctccac tgtgacggga ggggttgctc gcagtgctcg gaagagaaaa     1140
agaaggggtt gggataaaat cgtttcagta tgtcggatca tctgccgtta ccacaggttc     1200
aagctgataa agatctccca cgaacacatc tgcacaccgc cgaaaggcct ttcttgccgg     1260
cctctgtata taccaggagc ttatcgatgg cgtcgatgac                           1300
```

(2) INFORMATION FOR SEQ ID NO:415

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 757 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...757

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:415

```
aggatccccg cttgaagcta ttgttcgtac atgtcgttcg agtagtcggg catcaagctt       60
aatcttggcg ctttgggcgt aaagaccaac tcccaaaagg acgccgcgat cagcaataat      120
aatttcctca tactttaaaa caatttaggt cgtgattcag agaaccacgg ccgggttaaa      180
aaaacaaaaa aaatcccaaa taagattcat ttcaagaaca atccaagaaa agaaaaggaa      240
tttaaggcaa aatgctacct tctatttcta ttggtacttt tctcaaggag ttttttgcgg      300
cgcaatttag agaaaaaatt cgatttaaga agagtatcgg atttaaagaa catgttttca      360
atataagcga caagggatta acccttataa aagctgtcaa ttagcctttt gccaaaatat      420
tgactgtaat ctgaaggaga aatgaaagag gaaaaggttc atgctccacc tcattaaaag      480
tcagagtctt taaaagtgtt gtctaacaac acttaaagtt attgtgttgc atgtatttaa      540
accgaaaagt agagcagacc aaggttaagt cagtccagca tgaggaagga gcggagggga      600
aaggggaaaa aagatccttg actaaggagt cggggggttga tgtggaagta aagagttctc      660
gggctgtaca ttgttcgaaa agacaaacgc cccttactga tatgataggt accattatgc      720
tgagagaaaa gagggcacta tatgcgaaag agtaacc                              757
```

(2) INFORMATION FOR SEQ ID NO:416

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1324 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...1324

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:416

```
gactctagag gatcccacgg atgacatccg ctacatgcgg atcgcgctca agaggcacga    60
gcggctgctg acgaaggaga gattcctatc ggagccgtat cgtctgcaaa gggcagatcg   120
ttgcgcgtgc tcacaacaga gtggaaagct aaacgaccct acggctcatg ccgagatgct   180
tgccatcacg atggcctaga tgccataggg gggaaatacc tccgcgactg cacgctgtac   240
gtgacgtcga accctgcctg atgtgtgctg gcgcacttcg ctggacacaa atacgcgagt   300
agtgtacgga gcatccgaac ccaaagtggg ctacaggctg ttcccgatca tgcactccat   360
cccaaatgcc acgtagaagg cggtatattg gcgacgaatc ggagaatctg atgcgtagtt   420
tctttgccga acggcggtag cgagcaacac attatatatc tttgtgcaat atggcagcat   480
tcagtgtaca atattgggct gcggatctgc cctgccaacc acacaccacc atccctcttg   540
caagtaatcg acctgcgcga caaactctac atgatcgatt gcggagaagt gtccagcgac   600
aattcagaca cgaaaagctc catttcggac gtctcatcat atcttcatca gccatctcca   660
tggcgatcac tgttttcggt ctgcccgatt tatctccacg ctcggtctgc tggggcgtac   720
cggcaccctg catgtcatgg gccggaggga atagagcgtt tcctcagccc catattggag   780
cagtctgtca ccgaatgccc tatcaggtgg agatacatac gatcgatgcc tccgacatgc   840
gcttgtacat gaggacaaat ccgtcaaagt ctatagcata ccctcagcca ccgcatccct   900
gcggtgggct acctcttcga agagaaatgc ctgcaaggca tctgaacaaa gcggctgccg   960
agttctacaa tattccgctt ccgaatatcc cctcatcata gaaggatccg attacgac   1020
accggatggc ggatcatccc caaccgacac ctcacgaccc cgggtacacc acccagacat  1080
atgcttactg ctcggacacg gagttttgtc cctccatcgt ccctattttc aaggtgtgga  1140
tttgctctac catgaagcta cttttatgga ggaggacggg caagagccaa agagactttc  1200
cacagtacag ccaaagaagc cgccgaatag cacgacaggc aggagcaaaa cgcctcctca  1260
tcgggcatta ctccgcagat acaaggacgt ccaaggtttg ctggaagaag ctcaaagcgt  1320
atta                                                              1324
```

(2) INFORMATION FOR SEQ ID NO:417

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 588 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...588

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:417

```
gaacctcagt tcgaaggaca gaccaagacc aagctcggta acaatgaagg accggtgctg    60
tcgatatggc tgtaagcgaa gcactcgaat actatctgag gagcatccga aagaagccaa   120
actgatcgtg gacaaagtcg ttttggcgca actgctcgtc aggcagcccg taaggcccgc   180
```

```
gaaatggtgc agcgcaatcg cccttgtccg gtggaggatt gccgggtaag cttgccgact    240
gctcgccaaa gacccggagc agtgcgaact cttccttgtc gagggtgatt cggcggngga    300
acggccaagc aggggcgcng accgcgagtt tcaggctatc ctgcactgag gggaaagatc    360
ctcaatgtgg agaaagccat gcaacacaag gtttcgaaag cgaagaaatc cgcaacatat    420
ataccgcttt gggtgtgacg acggaacgga agaggacagc aaagcccttt accttttccaa   480
acttcgctat ataaagtggt gatcatgacc gatgccgatg tggacggtag ccatatcgca    540
cgcttatcct tacgttcttc ttcaggaata tgcgtacgct tcatacaa                 588
```

(2) INFORMATION FOR SEQ ID NO:418

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1340 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1340

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:418

```
aatgcatcca gatttagcgt aaaaatctca ttcttaccct gtattcatta accgcttctt     60
aggctcctat agaaatagtt gatctttcta agtgcttctc tagtgttttc gcaggtatat    120
aaaaaagaat atccatacaa gcacagctgt atcaaaataa tcctcctctt cttttccatc    180
tctcagggat atgataaaga gccaaacccc ttggattgtc tcgcaccaaa gttatggagc    240
ataaaaagtt ggtgatgaga ttgttcacct cttctcttag tccagcattc tgaagcgtat    300
tacccccttca actggagtat tgacaaatgt tgctaattgt acctctgcca gttttcttca   360
aatattcttt ttttattttt tatttggtct gggtgtcacc atgctttata ttaggttctg    420
atttagcctt gtcctcatta gaaagtaaga agtcaagggt agcatctcaa cctcttgcac    480
tcctaacttc cttgtgcgag gctttttaat ttatctattt ctttcgggtt actactcatg    540
gcaagaaata ctgcactttc gcatcagggc ttagcttaaa agagagttgt agttcaaggc    600
tccttcttgt ccggggatga dacaaagctc caattttcac ccttattccc tttctttttc    660
tcttcctcat acactctgcg agcctctcat ctttattttg aaagtattct atcccccttt    720
cgataaagtt ttttttgttg tcgaagcagt tttctttaca aacctcttgc ctatctgtgt    780
caagtaaact tgtcgagctt cggtttgacc tcggaggcgc gcagcgttgc cccgcatccc    840
tggcctggaa gtggatgatg ggcgtatgct gttccaattc aattccaact tatacatcgt    900
ggtctatgct ttttgttttg tattgtcctt aaatagactt ccatgagtcc cttattggtc    960
tcaagcaacg attcggagaa ctctgccatt tattcaaatc ctttgttctt tctcgttcta   1020
attcgaacat gttttgtctc gtaattcctc cttttttgatt tttaatttgt agctccatta   1080
atggctacga caataattgt ggcagtggct actaccacaa aacagagaag attaaagttt   1140
ctatttccat gctattttct gtatttgaaa taatgtttat tgggaagtag aggcagatgg   1200
caaatactat aagcgtaata atatcccacc caatagcccc catgtcgagg acaagggtc    1260
cccgatattg aagagcgagt gatgcatcct ttttcaacaa aagtgttgat gcctaaaaag   1320
ccacaagtaa cgtgataggc                                               1340
```

(2) INFORMATION FOR SEQ ID NO:419

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1514 base pairs
        (B) TYPE: nucleic acid

(C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1514

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:419

```
gatagagata ctcttgagaa ggattgattt ggaagaggtt ggccgaagct ttccggctat      60
tttgccggag ctgaacggta ccacatagtt gatacctctc gatctgcata gcgtgatata     120
gccgctatct ggtcattgga ggctcctcga taataaggtg acagtcattg agctcaccac     180
tgtggatcac atcctcgcat cagacgtatt cgatacatcg taaacgcgca aagtcaccga     240
cactctctct tcttcagacg attcagcccc atcagcatac cctcgtagaa ttcccatatc     300
gctgggtatt gcccgataga gggagcatca gtccgacctc tatgcctccg actgcgatgt     360
cgtaggggag gaagccatag ccgtggaatc gcgccgggga tgcgtagttt gtggcctgca     420
gggaagttgg tagcagatat accggattgg ctttcatcag ttcctcttcg ctcaatccat     480
attttctgct atggagtaga gcgtttcctg tggccggata atgtgttcgc tcggatgaca     540
gcggcggata ttttgctatt ggcccggacc ggtttggacg gaatgagcga gtctgccctt     600
ccttgatccc ttgtctggcc gaagggttga gcgtataata tcatcctccg acagaccgta     660
ttggcgcgcc agtccataaa cggtcttttg gcttgcacta cgtgtacttt tgtcctgcta     720
cgcgtctgac cggatccgat actacggaca tcagcacaca cgtaatcagc aggatataaa     780
gacctttatc cggaatacat gatctgtcat ggtttccccc tttctttttt agtctattta     840
ttattaggtg agatggggca aaggtaacaa taacgactct gcggcaaatg gttatcctct     900
ttgcaatctc catataagag aactacgtgg gttaatgtct tcgttataaa tcaagccatt     960
tcaatatcga aagacatggt gcttaaggtt atcccggatt ggtcattgga aaagtaaggc    1020
ctaacgacaa ttccccgggt ttatcgactt cagtcggttg ctattgattt gggttgtgag    1080
cattcttgcg cgtgagcatc ttcgagtccg tgtagatgtc cgtacttctg cgagctgcag    1140
tattgcaaag gtgtgatgga agcagcaata agcaattgct tctgaatgcc cgaagctgca    1200
atcgaatacc ttagaaggcg atgcgcataa cgaggccgga aactccgtat ataaggcgat    1260
aaatttccgt atatagaaaa tttatttccg tatatacaca aatttatttc cgtatatacg    1320
aaaaatattt ccgcatatgc ggaaatctcg ctaccttcgt ggtgcgataa aaagcaatca    1380
aatcgagata gtaaagtgtt taataaccag ataattaagt tattatgatt aagattaaag    1440
caatcgaaag aaaggccgga ttcggcaaga cagcaaacgc ttggtaccct gcaatcactg    1500
cattcgatgt gaag                                                      1514
```

(2) INFORMATION FOR SEQ ID NO:420

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 822 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

```
        (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION 1...822

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:420

tggccgtatt tcctttcgtc tctgtcgaac tgcacccctg tctggcggat cccatccagg        60
cgatttgtcc cctcaggaac ttgttctgct cgggcatcct cgcaggcact gcacgatctt       120
ccggtcgatc agccggaagt cgcccgttcc agcggcatat cgatagacgt gatcttgcgc       180
atcgtccggt agaaactttg gccgtcgctt tcttgaacca cgtttcgcct tcgcgatgct       240
tccgcgtgca tagaccactt cgtaaccctc acggtatttc gcatacagtt ccggatcaat       300
tccggcggat cctgcaagtc gccgtcgatg atcaccgtag ccttcccctc acatggtcta       360
atcctgccga cacggctatc tgatgaccga agtgcgactc aggttgatgt agaagaaacg       420
gtcatcaccc ttgcacaggc tcgcaatagc tccatcgaac catcggcggc tgccgtcatt       480
gacaaagatc gttcgtagtc ctccgttatc gaagccgccg ccgcactcaa ccgccgcaca       540
gctcgggaag ttccctttct tcattataga tcggcacgat gatggaaact ccttcgtata       600
agtcgtattg acatccatta gaattgacgt ttagattttt tcggcacttc tcaggtgaaa       660
aatgaagtgc ttaggtgaca agggtcggac cgttcctttg tccgcttcgg gatggaacca       720
gcggatcgta ctgtccgtct gaaccatgtc atttgcttgc gggcatatac gcgactgttg       780
cgttgatccg ccttacggcc tctgcccgat cgatcgagcc gt                          822


(2) INFORMATION FOR SEQ ID NO:421

        (i) SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 626 base pairs
              (B) TYPE: nucleic acid
              (C) STRANDEDNESS: double
              (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
              (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION 1...626

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:421

ggatccccgg gaaaaccgct gtcattgtag taggagcagg tccggcaggc ttttcgcagc        60
actccggctc atcgagcttg gtctgaggcc tattattcgg agcgaggtaa gtccgtacac       120
gaaagaagag cagacatcgc tcgcattcca aagaggggca cgtagacccc gaatccaatt       180
acggatttgg cgaaggggtg ccggagcttt ttctgacggt aaattataca cacgtagtaa       240
gaagccggag atataaccaa aatactacgt attctctgca aacacggagc acagcttcta       300
tcctgatcga tgcgcatcca catatcggca ccgatcggct accaaagtga tagaaaacat       360
tcggcaccaa atattggcag ccggaggaga agtcacttca gttgccgaat ggaaagcctg       420
atcatacata acggtcaagt ctgggagcaa gagacaacaa ggggcgtgaa tactgcggtc       480
ctgttatcct gcaacgggac attccgcacg cgacatctat cgctatcttc accgaaacgc       540
attcgaatgg aagcaaaagg aacagctgtc ggtgtccggc tggagcatcg cagcntctga       600
tcgaccaact gcgctaccac aacccc                                           626


(2) INFORMATION FOR SEQ ID NO:422

        (i) SEQUENCE CHARACTERISTICS:
```

(A) LENGTH: 1128 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1128

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:422

```
gccacatagt tgtgaaaagc ccggacaaag agcaccagcg aaagcacgta accaccattc      60
ccgcaagaaa ccatgccgta ccgaacttga acgggacgaa acggaaagca ccaatatggc     120
aatttgcagg attgtactga cagaggcttc gccttgtctt tggtcgtgta ccacgaggta     180
tccaccgcgc gctttctccc tcacggaaga ttgccatata tataaactgt atcagcacca     240
tgccgacgaa ggtatccatg cgttcagcca tccggcttgc aacgtggtga aaaagaaaaa     300
tcactcatag tcatcgggaa tgatattgtt tttttaatgt gatagcgata cggcaaaaat     360
cagggtatac accagattgt tccatccgcc cgtatcaaca gaagaaacgg ttgcggcagc     420
gttttccaaa ggaaattgag cagatggtga tcaacggtgt tgcgaaaact atccaacgag     480
gaaaagaagt tgcttttgca gcaccaatac agaaaagagc aaccatccga ttcccattag     540
aaaaaagaaa aaccgcccaa ccagccggca taggagagaa aatggtcgtg atttcgggat     600
gtccctgcga cgatacgatg ccgaaagccg ggaagaagca tgataagcac ctcctacaat     660
tatacttacg gatagggaag caagcaccag caggctgttt ttcgtcgcgc tttcttaacc     720
ctgagaaaca aatggagaat ccgatgatgt acagaaccgc cgccaacggg cctattatcc     780
ctccgcaatg agacgctcca agggcactgt gcccatagaa agcagcagat cttttcccga     840
tcgggaatgg gttgtgtcgt aaaatacagc aacatgtcgc cgtatacatc agcaggctac     900
ctgccactcc cacataccct gtcaatctga gttcttatcc ataccttttt cttattattt     960
gagttcgcaa aaatatacaa tagaatatcg tttgcaatcg ccaatagtgg ctattttcac    1020
agcccggaac cctatttctt agggtttgtc gattcgtcaa tcagtaactc atatcctcaa    1080
attcaacctt taataatctg tttggcattg gctctctgcc ggattgca                 1128
```

(2) INFORMATION FOR SEQ ID NO:423

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 2750 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...2750

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:423

```
aactccttta tagcggcatg atccggtgtc tgaccagatt gcgccggaac gcggtatcct     60
cattggaaga gtcccgtacg ataggtgatt ttttggtcag cagataagcc tctatctcat    120
cccgtgtggc atccagcagg gggcgcagat accatcgttc cgcttatagg gcatcccgca    180
caggccgctg attcccttcc tcgacagaga ttcagcacca tggtttcggc attatcgtcg    240
gcatgtgcgc caccgccacg tattcgatag ccagttcttt ccgcaactgt ccgaccattc    300
gtaacgcagt tctcgagcag ccatctcgat cgaaatcgac cgccgcgagc ataacgaacc    360
gtgtcgaagt cgatccgatg gagcggaaca tcagatctcg gcataggcgc tccacgaaag    420
ctgcatcctc atcgctctct accctcggag gtgaaaattg cagtgtgccg ccaccgtctc    480
ataccccaat cgcgcaatac gcagagcaga gccaccgagt cggcacctcc gctgagagca    540
ccagtacgag gcggtctcct tctcggaaga gcttccgctc tctgatcgcg ttcggacacg    600
gtttgtcagg gaaatcttca tcttgttgtg aatatatagg gggaaaatat cggcccggcc    660
atcctgccga tggaaaaaat ttcttgaaat gaagaggctc tttatccgaa taagccgaat    720
gctgccataa aacaagagag aactctcgtc ctctctcatc agtcctgccg gcatctccga    780
agaggccgaa ccttatctcg gaaaacttat gcacctgtga acccgaagca tcgccggaag    840
cgaaaaccgc ctacaccggc ctcttactct tggggagctt tagctcccat ttcgggatcg    900
accatgattc gtccgcagta ttcgcagacg agattttttt ccgaagcttg acgtccagct    960
gcttctgagg aggaatcttg tgaagcaacc gccgcaagca tcacgctcta cgggcaccac   1020
ggccaagcct tgtgcgcagc ctttctgatg cgcttgaaag ccgtcagcag gcgcggttga   1080
tcttggcttc gagcttcttc gccttttcgc gcagtttctc ttcctctgct tagtctcggc   1140
aatgatggta tccagttcgc cgcgtttttc ggccaaacct cgctatgctc ttccagcacc   1200
tctttcagag tagctatatc ggtctgcgct gttggatttc gacgttgtat tccttgatct   1260
tcttttcaga cagtggatct ccagctcctg aaattcgatc tctttggaga gattgtcgaa   1320
ctccgattgt tgcgcacctc gtcgagctgt tttttatatt tctccagcag cgcttggctg   1380
tactgatctt ttccttttcg gtggttacag cctgattgag cgcttggatc cggctgtgaa   1440
gttctccaaa cgagtctgca ttccggcgat tcgtcttcca gatcctgtac ttccagcggc   1500
aattcgccac ggagagtctg atcttatcta tttcagagag ggtattttgc agcttgctca   1560
gtgctgccat ttttcctcta cgctctgttc gttctcaacg atgatctttt ctttagcatg   1620
atgctcaatt aactaactac aaatagttta ccggattggt tgcaacgatg atttgtgggt   1680
ggcaaaggta gggaatttct gcgatattat gcgcaaaata gctcattagc cacctcttcg   1740
ctctcgtaat gaccgatcgt aaccgcagca gatgctcccc tgcatcgaag aagtcgttgt   1800
acttcgcctc cccgtcagga agaggtctgc accctcctgt gctgcacgcc gccacatgaa   1860
agaccgctac cgccgcatat agccatccgc ctcaacggcc gttccctcca accgaatggg   1920
acaggacctt cagaccgaat acctccttga tgtgcagcag atctcccgct cgcttatggg   1980
cgaaggcaga tcccccacta ttccgcctcg gccgagggat gatcgttggc cagcgggatc   2040
aggctgacag ccggcagccg tacggatgag ccgcgtgcaa agcctgcagc acagtaccct   2100
gcctgtagcc ggcagtacga ggctgatccg ctcctccgcc tcatggtgca attcgctatc   2160
gctcccacaa agggattggc accctcggca gctctgaaag tcccttgccg gcatggctga   2220
acgaacagca atcgtaatgc cccaaacggc ctgcccggcc tgccacaaag cctgcctcac   2280
ggcatcggca tactccgtgg ggagaaggtg accagttcta agagcttgcc ttgcagcggc   2340
tccagcggtc gctattcagc aagccgaagc gttcggccag cagcgcattc agtccctgcg   2400
ggcgttgtcc gcattggtat gagccgcata tagcaccaga ccgtgccgta ggccagctcc   2460
acgcatcgct ccacgtagga gctgccggtc aatcgcttgg cggtttgaaa agaatcggat   2520
ggtgggcaat gacgagattg catcccagcg aatggcctcc tccaataccg cttcggtaac   2580
atccacacag aggagggacc cgttgcctcc cgcttggtgt cgcccacctg cacgccacta   2640
ttgtcaagct ctcttgataa gccctcgggc agaccgcctc gatagcctct ataattcctg   2700
aatgatcatc ttcgagtgcg agccaagagg ctctgtttgg tttcttgtcc               2750
```

(2) INFORMATION FOR SEQ ID NO:424

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2201 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...2201

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:424

```
tggtgtaccc acgggagaac cggattaccc gaatatcggt atcgacgaca tttctctatg    60
ctgcagaggg atatgcacaa gattcagaac cgtgtccgct ggngcatttt cgcggcaaag   120
ccacctgccc cgattgtcgt gggatgcact caagccggat gctctgtgcg tgagaatagg   180
cggacggaat atatcgagct gacggctctg actgtagagg agacgtcggc atttttcgag   240
gggctcagct atcggaagac gatctacata taagcanacg gctgctggag gagaaggcaa   300
gcggctacgc ttcctgctcg aagtgggggt ggggtatctg acattgaccg cctgtccaat   360
acgctctcgg gtggagagag ccagcgcatc agctggctac gcagctcggc agcagcttgg   420
tgggttcgct ctacgtgctg gcgagccgag tatcggtctg catcagcgag atacgcatcg   480
gcttatcggt ttctgaagcg actgcgcgat ctgggcaata ccgttgtagt cgtcgagcag   540
acgaggagac aatccggtca gctgattata tcatcgacat agggccgagg ccggccgcca   600
aggcggcgaa gtggtctatg ccggcgagta tgaccgctag acaaggatac tccgggctat   660
acggcggctt atctgacggg acgagaaaga tcgaactgcc acgcctgcgt cgtccatgga   720
actcatatat cgaagtcggg aagcctcgaa gcacaatctg aaaggggtga atgtccgatt   780
cccatgcacg tgctcacggt ggtgaccggt gtgagcggat cgggaaagag tacttggtgc   840
gcgatctttt ctacgaagga gtaaaaagga ttctcgaagg agcagcacac aagggttagc   900
ctgcgagggc attgtcgggg acatcaagtc ttccgagaca ttcagtacgt ggatcagaac   960
aatttcggtc gcagcacccg tccaacccgg tcacgtacat aggtgcttac gatgatattc  1020
gcaagctctc agtgcattgc cactgtccaa acagatggga taccagccct atttcttcgt  1080
ttcaataagg aaggaggccg ctgcgaggtc tgcaaggag agggcagatc gtggtggaga  1140
tgcagttcat ggccgatata gtattggagt gtgaaggtgt catggcaaac gtttccgcaa  1200
ggagattctc gatgtggagt actgcgcgcg aatatttacg acttgctgga gatgacggtc  1260
aatcaggccg ttgattttc accgatcatc cgaaagccag ctacacggac aagatcgtgg  1320
agagctcgaa tgtcttcgag aggtcggact cgggtatctc aaactgggac aggcagcagt  1380
acactctccg gtggggaaaa ccaacgcgtc aagctggctg ctatctggga caagccaaac  1440
ccgcacccac gcttttcatc ttcgacgaac gactacgggc ttacatatcc atgatattcg  1500
taccttgctg cacgcactgg tgctcttatc gacaaagggc attcggtagt ggtggtagag  1560
cataatatga gataatcaag agtgccgact gtatcatcga cttaggccct gagggtgagg  1620
tgccggtggt tatttggtcg caacaggtac gcccgaagag gtgatggatg cgatgcctcc  1680
tatacgggaa agtggttgaa agagatattg ggaaagaaca aagaggttga acatataatt  1740
ataatagtgt agtatggtag gatcgtattg ggttcgattg taatcggtgc tttggccggt  1800
tatatagccg gcaattgcgg cgagggaagt cattgggctt gttgctcaat attctcatcg  1860
gttggtgggt ggtgtcctgg cggatacct tctgaatttg ataggcatat aaatggtgga  1920
tctttcttgg cgaggcttgc tacgtctacg ctgggggcca cgttctactg ctgctggctg  1980
acctcctaag caaaaagcgt tgagattggc agctatctgt ttggcaattg gggggtacag  2040
cgccggttgc ttatattatt gagtgtctaa ttataaaatg aatgcaaaat gttaggatcg  2100
atttttagttc cattattatc ggtgcattag ccggtttat tgcaagtaag ttacggaggg  2160
ccgatcgtta ggcttatgct caacattatt atcgggtttg a                     2201
```

(2) INFORMATION FOR SEQ ID NO:425

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 984 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...984

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:425

```
ccgatcgaat gcctcttcac gatggacgaa agagacgggt atgaccggtc gatgaaccta    60
aagcccggat ttttcaatgn aaagatcctg ctcaacctga cagcgaagac gaaggagagc   120
tcttcatcgg gtgcgccgga ggtatggaac catggtcgaa tttgcctacg aaaagcgcga   180
agcgacagac gactattcta tttcaaggta aaggtcagcg gtctcaaagg cggtcactcc   240
ggagggagat tcacatcggt ctcggcaatg ccaacaagat cctgactcgc tatcctatgc   300
tcttgagcac gaattggatt ggaagctctg ctctttccag ggagaaacct gcacaatgcc   360
attccgcgcg aagctcatgc cgttatcggc ctaaggctga tcagaaagaa cgtgcacgag   420
ttatcttgaa cgaactcgct gtgcagtgga ggacgaactc aagcgagtag atccgggtgt   480
gaagctcgaa tgaaatcggt aggaaagcct gcatatcgta tcgattgtga cacgaagcgc   540
gtcttgttcg cgccctgtat gcttgccctc acggcgtcta cggtatgacc atgacatcga   600
aggtttggtg gaaacgtctt caaacttggc ttccgtgaga tgaaagaaga tgataagatc   660
tacgtggaga ccagccaaag aagctcacat cgtctcttat cagcgatata gccaatacag   720
tggcatccgt attcggcttg ccgatgctaa aatcagcttc cgcgatccgt accccggatg   780
gaaaccaatc ccgattcgcc gattttgaaa gcggcatctg agtcgtatga gcgattttcg   840
gtcgtaaacc tgctataaaa gcaatccacg caggtttgga gttggtctct tcctggataa   900
ataccccctat ctcgatatgg tttcattcgg cctaccctcc gagatgtgca ctctcccgta   960
gagaagatcg aaatcaagac gttc                                          984
```

(2) INFORMATION FOR SEQ ID NO:426

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 506 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...506

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:426

```
gtagcctctc tcattcaatt tatgagctaa atccaaaatc aaatcacaac tttatcaggc    60
atgatacgag agaaaaagac aagacgcaac accttggagg agtatagggga gtatgacaat   120
gcaagggaga aaacagagat atgtcctgaa gttaggcata actttttacat tctctacacc    180
ttgcccacac aaagcacttt cattgcttgc ccttcgacca aaagatattg caaactttc    240
aaaactcaac tcggtatctt cccttctcaa cttctaaatg aagatccccc cctatcccca    300
aagaacaatc ttacgcttag gaaagacaac tttcaaaata cgggcaacca atacacattg    360
ccataactag ttgagaaaat tatgggagta ttggatttat taataagata aaaggcaatt    420
tccacaatcg ccaaggctta gacgactccg ataggtatca actataatta gtttgncaac    480
aaagtccctа gccttttcgt taggaa                                         506
```

(2) INFORMATION FOR SEQ ID NO:427

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 909 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...909

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:427

```
aaacgggttg ccaagtgact gattgccggt ctatggtata ggaatagcga gttctcccgt      60
ggctttgatg aactgagaga aggggacgcc gacgaaatct tggtgtcgct gtacttcttg     120
ccggctgcca gatagatcag attcagggat tgcctgcctc ggatagtccg aattgcatcc     180
aaagatgatg aggactttct ctgaaacgga tttgttgaac gtatagatat accccatttg     240
agcaagaact gactctgaag gctgagcagc aggggcggat tgttcgccgt aatgcctgga     300
aagtttctgt ctgatgcccc aggaggttgt agttgagctt gaggggaaaa tagcatgccg     360
gtgttccttg gagggctgaa attcgtaggt ggcgaaaagc cgaaagagta catgctaaag     420
tagtgtgccc tgttcagcgc gtggcagaag cctgaaaagt cgtagtcgtg gggtagtaat     480
agtatttatc agcagaccgg gaaatacaat cgagggaaac gagaggttca cggccgtatc     540
atgttgtacg aatttatatc gatcagccga ttgctgctat tttcgggaga ttgccggtct     600
cccactcata cgatccaccg atattccaag aaagatttct cctccgccga atacattgcg     660
ccgagcaaga gcaaaattca gtccggaccg atgaagtcat tgcttttgct cgtgaacaag     720
gtctctaatg atgcacccaa ggtttgtcga gggtggttag cagtcgcaca tccaaaaggc     780
cggaatggaa tcgcgttgca aaaaattgag atcgataacg gagaaggctc ccaacgagcc     840
aaggatttgc gtgtcgtctc atcgtctttc tgccgataca gatgccggag aaagaaacga     900
aagcgtttg                                                             909
```

(2) INFORMATION FOR SEQ ID NO:428

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 549 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature

(B) LOCATION 1...549

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:428

gctccatagg attcattgaa aactgcaaag tcgaaaagct taccgctacc aaaagctcac   60
ggacaatacc gagaacagnn aaactgaggg taaagcccat ccgataccga taccgtcgaa   120
catggagtgt agcagacctt ttttcgagca acggcttcag cacgaccgag tacgatacag   180
ttcaccacga tcagtggatg aagataccga gactcttgtc caaatccggc atataagcct   240
tgatagcatc tgcaatatcg tcacngaaac ctgcaatgat gacaataaaa gccggatacg   300
aaccatatcg gggatgagat tcttgaccaa ggatactacc atgtggagca gatcaataca   360
aacatggtgg ccagtcccat actcataccg ttatggccga cgttgtcgtg gccaacgtag   420
gacacatacc gaggaggagg agaatgtcgg gttctccttg ataatgccgt ttataataac   480
actcaaattc tactcattgc gcttcggtat tatctgngtt agtattatcg tagaatcagc   540
ggagctgcc   549

(2) INFORMATION FOR SEQ ID NO:429

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 428 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...428

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:429

ggggaaaacg actctgacgg aaaaattctt gctcttcgga ggcgccatta tgtggcagga   60
gcggtcaaaa gcaacaagat aaagaaaacg gctaccanga ctggatggag atagagcgtc   120
agcgtggtat atcggtggca acttccgcat gggattcaac tacaaggact ataaaatcaa   180
catcctcgat acgcccgtca ccaagatttt gcggaagata ctttccgtac gcttactgct   240
gtggaagtgt gatcatcgtn atcgactgcg ccaagggggt cgagacgcag acnccaagct   300
gatggaagtt tgtcgtatgc gcaagactcc cgttatcgtc ttctcaataa gctggaccgt   360
nagggacagg atcccttcga tctgctggac gagtggagga agagcttcag atncgngtgc   420
nggcactc   428

(2) INFORMATION FOR SEQ ID NO:430

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 397 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...397

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:430

```
gcgaataggc ctgacaacac cgtagccata taggctatca gcacggtgaa agaagcatcc      60
tgccggcacc tttcccgatg tcggcaatag ccaccgtccc aatccgagga taatcagcgg     120
aatggagaag ccgagcagtt cgctgaaaga gcattgaacg tgacgaagat ccgaataaac     180
gggaagctga agaggtgccg aagccgatac cgaggacaat ggccaatatg atcttgggca     240
agaggcgatc cgtagtttac gcatatggtt gggggttgct tgatcaagaa gatttttgtt     300
ggaaatatag cggaagttag catccagcag acgacgggca gcgcgaaact cctggcacga     360
tcttccaaca cgtctcttcg actccggtat gactctg                             397
```

(2) INFORMATION FOR SEQ ID NO:431

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 844 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...844

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:431

```
ggtttctgta ccaaaagtag tccattctta tcgaatagag ccatcggcac gcgaaaggcg      60
aatcaagaaa caggaaaagg gtacaccccg gattcttccg cattataatc caaggtaata     120
caggatgcac gtctatacgc ccatatactt gccatcgaca ttgcggatgg aattatgtac     180
ttgtttctca taagccttca ttcttttagg atagatttaa caatatgcta taaagacata     240
aaagtgtgtg cctattcata atttacgaac ggcaattcgt caaaattccc caccttgccc     300
tgcactatca gggaaagaac gatatgaaaa gactgataac aacggagcag cctttctact     360
ggctgctaca ctctctgcct gcaacggcaa tacacaagtg aaacccaagg cgatcggact     420
gaacaggccg aaacggtaca accgatctct tctcggccga ctcggcttac accttcgtgc     480
agcgtcaggt aacttttggc cctcgcatcc ccggcacagc tccgcatcgt gcctgtggaa     540
ttggctcgtg gccacgcttc gcagctttgg tgccgcggtg caagagcaac agccgaaatc     600
aaagcgcatg atggcaccat gctgcccatg cgcaatacat agcctcatac cgccccgaag     660
ccaccgggcg tatgctactg atggctactg ggatacgcgg ccggtctgcg atcaggatgc     720
caaccccgct atgcaacaga gaccttcgac ggtgcggacg atggcggcag cggaattagg     780
cgttttattg gagatagcgc gctatctggg acaacagaaa gatttgggca tggcatcgat     840
attg                                                                  844
```

(2) INFORMATION FOR SEQ ID NO:432

    (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 723 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...723

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:432

gccgagaaag agcaaatgat tttttcgagc gtaaaacgga cgaattgcct tcgtgttttc   60
cggaaaaatg gaaccataaa tttttcgttt tggtttgaaa cttttttctt ccggcgcggg   120
aagtgaaaaa ttctcgcgcc acgttttcg ttccgtctga aacaattttt tggaacgtaa   180
aaactcgaag agggcggggc ggatcaaaag aaaataagtc cgaatcggag gaaaaaagca   240
gcaagcaatg caggttcaaa ggcaagttgt gtcgttttc aggcttctcc atttctgtat   300
aacttccgtc taatcccgat cttggcagca gtatcggtgg agtgggactt tcggacaatt   360
atcaacggtg ctcaattcat tatctttgca gcatttagat acgaaaaaat aatctgaaca   420
ataatggata gacaattcaa ggaactctta ttactacggc cctcccgtat gccaacgggc   480
ctgtacatat ggacacttgg ccggtgtcta cgttccggcc gatatatatg cacgctatcg   540
cgattgcgtg gcagagactg cctgctgatc ggcggttcgg acgaacacgt gtacccatcg   600
ccctgaaagc caaagccgag ggatgcactc cgcaggagtg gtagaccgat accacgaact   660
gatcaagccg ttcgttcgaa gggctggtat ctcttcgaca tatacttaac gtaccacaag   720
cga   723

(2) INFORMATION FOR SEQ ID NO:433

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 562 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...562

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:433

ttccttgatc ttcgtgccgt cacgatagac tgtataggta tagcttgcag tgaatcgtct   60
tcgacttcca tatcagttcc atctcccatt ccggcgcgcg catcgtgaaa ggtgtacttc   120
ttgcctgctt cgaatgtgaa atcgtcaaac gtgcaggctg gttgcctcca tctcctgcga   180
tccacatctt tccggagcag gttccgggtt cgtaatgcaa tagtcgtaaa caccaccggg   240

```
gattaaactt caccctgtcc tgtaacgata atattctgtg tagtaacaac aggacggcat    300
tggccgggat caaatactcg aagttcgcac tgtaaagatc ggagaagctg ttccggtaaa    360
gagaggaccg gttgccggaa tgacacttcc gatgtattgt gatcggcatc caacaagaac    420
tggtaacccg tattgtctcc catacgttgt ctgctgcgag cacaaccttg gcttcgttgg    480
cacgtacatc tttgcaggtt cgatcgtaac gaaaagaccg tctccgatcc gttttactta    540
cgagaacctt ctgtcttctt tg                                            562
```

(2) INFORMATION FOR SEQ ID NO:434

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 569 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...569

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:434

```
ggcacatcta tctcttccag caaatcctca gctacgggta aaaggagttt tttccttcgg    60
gcgtagttat agacaaaann acattgagcg tactctcgcc acatcatcga ttgtccctac    120
gaaacaacct tctcggtcga ataccgtaag ccgatgaaat gttcccaggt gaattcgata    180
gaatcagtat cgaagttcgt cgttccataa agagagacac accggtgtac tgctccatct    240
cctcctgctt tcaataccgg caaagcggaa ncaaagtaat atcatcggtt ttctacggta    300
gccaataaga cggaacggaa ccggcaatgc atccagctcg aaaagagaaa caaccgctct    360
tcttcctcaa agagcgtact caaatcggct gtagacgagc gttgcactct ccctgaacgc    420
catgcggctt acccagcaca cgatatgctc caatgaatcc aaatcgatca taaagcatca    480
aaggcgagag tacgtgcgcc gatagcgttg aggcgagtat ctatggattg gtaacccctt    540
cgatctgntc tacgtttgtg gatgatact                                      569
```

(2) INFORMATION FOR SEQ ID NO:435

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 902 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
          (A) NAME/KEY: misc_feature
```

(B) LOCATION 1...902

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:435

tggcgcttac aaaacgaaca ggatccggcc aaacgtcagc agatcatcgt aaaattctca   60
agctgtatga tgaccgtgtc aaatacttcg gagaagaccc aagtatggaa cggactatat   120
catggccagc aaaatatcgg actacatcag tatatgggcg ataaaacgga ttatgacaag   180
gtttatgaat ggatcagccg accatcgatc agcatggaga gaatgctacg cctcgagctc   240
tattcattat gcttactcct ctctgaacaa agctatcaga aatgaggcat ggcagaaacc   300
tatattaagg attatacgtt tgcatcccag gccatggaga agcgttggaa gtggccgatg   360
agaaaggcaa agagtttatc caaccgctga aactcagatc gacgaactct tcgcccagag   420
tggtcttgca gactgcaata cttggtgaaa atgtatggcg ataagctgga ggaaaacaag   480
acggatacga tttcctgaag aatatgctcg gcatgttcca cgcttccgac tgcgagacaa   540
tccgctttat ttccaagcca ataaatacct ctttgccgta cagccctcgc tatagctgct   600
atgggccttg ccaaagaggc gatggaagga aatcgatcaa tgaagccagc gactatctcc   660
aaaaggctat cgaactaagc aagagtccaa agaccgtgca gcctgcaact atacgttggg   720
tctgttggct atgaacaggg tagttactct acggcacgct cttactgcaa taaagcactg   780
gccgagatcc tgcgatgggc gatgctctta tcctgattgc ccaaatgtat gcacaacggc   840
caatactgtc ttcccggtga tgctatcagg cacgctgngt attttcctgc cgtggacaaa   900
ct   902

(2) INFORMATION FOR SEQ ID NO:436

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 2107 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

       (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...2107

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:436

ggccctattg cctttttggg gatagccgta cctcacttct cgcgcatcca ttcaaaagtt   60
cggactaccg catactgctc cccggcacca tgctgtgcgt gctctgctga tgctcgtgtg   120
cgacatgatc acgcaggtac cgggcaaggc tttgtattgc cgatcaacgc catcacctcg   180
atgattggtg ctcccgagta atcatgacga tcgctcgcaa ccgcaaaaag cgtttaatct   240
tcaacgaaca ggcgatgatc cataccgaca atgtgaccct gacgggacta tctacggata   300
ccgaagcaag aaaacggagc gcatcgtatc gaagctaatc gactttccat gcttaatggc   360
gaactggtaa tgctgatggg tccgaacggc tgggcaaatc cacgctcatg cacaccatcg   420
caggattact gccacctatt tggggaatat caccatcgca ggacgcgaca cacacggtct   480
ccgcatgaga agaaagccaa gatgctcagt ctggtactga ccgacaaaat agcagcgaca   540
atctgactgt tcgggatatt gtcgtcatcg gacgctatcc ctacgtcatt atcggggtag   600
cctgaccgca aaggacaagg agattgtgaa tgaatcgtca tagcatgccg actgatggga   660
ttcgaatcgc gccaatacgg ggaattagcg atggagaaaa acagcgtgta atgatagccc   720
gcgctttagc ccaacgactc ccgtgatgct tcttgacgaa cctacggcac acctcgacct   780
gccagccgtc tggaggtgat catcatgctg cgcgaattgg cacgcaaaac gaaaagagta   840
tcctcgtttc tacccacgaa atggatctgg ccctgcaatg ggggacacgg tatggctgat   900
gaacagccaa ggggagattt gtcgtggggc acggaggatt tggtactgaa ccactgtttt   960
gaaaaagtat tcggcaacga actctttcct tcaatataga cagcggagcc ttctccgtca   1020

```
aacataaaag gctacacctg tttctgtaga aggacagggt gctgcctaca aatggacatg    1080
agtgctttgc accggaatgg ctatgtggaa tctgcagatg cctccgacgc aaaatcaccg    1140
tgggagaggg ctgctggatt ctgcaggagg gcgattctcg aaaagcttcg actccatcgg    1200
ctccttgcta caaacgctgc acgctaccac gaatgaatgc ttgtgaaaca aacaattata    1260
tgcaaaaccc tacgtagatt tcgacaaaga aacgcctctg ttttttagtc ctatgggcga    1320
tcccttacc acttgaaaga aagtatgatc gttcgcttcg caggacgcag agagtcgtga    1380
gcacctgcaa tctcaacggc ggctaccgag aagacctccg cacgccttca acaacagttg    1440
cgggagggac cccgacgtaa tagccaaacg tctgtaggga tgcgaggaaa gaccatgatc    1500
gaacactacg ccgccttagg gaagaattgg gtctgcctct tgacaaaaca acgggcatgg    1560
gtaccgctct ctgatcgaaa atacggcgac ctcctctcgc caataccacg gagtaacgtc    1620
atggcggttg ccacggcagg tatagatgta aatggggggac gcgcagagaa cctgccgcat    1680
acaacgaatt tacccaaaca gacctgatta agccggtacc atcaacgtat tcctgttcat    1740
cgacgcctca ttggatgcag gaacctgaca cgcgccctcg tcaccgccac cgaagcgaaa    1800
tcggcagccc tgcggaactg atggcaaaca gcatgtattc agaagatttg gccaccggtt    1860
cggaactgat tctctgatng ccatctgtaa taggagtcg gagatagtgc tcagaatagt    1920
ggcaaacacg tgcttttggg cgaaatgata ggccaaagcg gaaagaggct attacggaag    1980
ccttatcccg acagacaaag atgacccctc acgtcaggct tcgatcgaat ggcagaccaa    2040
acgctacggn ataacgagga agcgatcgtc tccgaatgcc tgcgcctgta tccacatctg    2100
aaaaaag                                                               2107
```

(2) INFORMATION FOR SEQ ID NO:437

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 719 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...719

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:437

```
ccttttttttt acgattttcc cggccttcat cctcgccgct actgctttgc ggcttgtgga    60
gggggtactg cttcaggctc cgatcgtacg ctggctgtac catcgagcca cagaaatact    120
tcatcgagtc cattgcggat aagtcgggca ggtggtggca ttggtaccgg ccggcagcaa    180
tccggaggaa tacgaccttc gcctaccgtg atgaagcgtt tgtccgaagc agatgcctac    240
ttctaatagg aggactgggg ttcgagcaaa gaaatctcgc tgccattcgg gacataaccc    300
taagctccct cttttcgaaa tgggcaaagc cttggcggat gccgaagtgc agatctccac    360
ggctcctgca cagatcattc tcatacagac ctcatgccca tgatccgcac tattggagca    420
gtgtggtagg ggcaaaggca ccagtcgtgc tgcatacgac gcgcttgtgg agctttatcc    480
gaacgagaaa acaaatggga caaagggcac gaccgtctca acggacgtat cgacagcgta    540
agagactcgt cgataccatg tttgccaatg gcaaagcaga caaagcctcg tcatatatca    600
cccatcgntc agctttttcg cccaagagtt cggcctgggc agatcgtcat agaggaagat    660
gggaaagagc ctacggctgc ccacctcgtc gtgtggatcg atcaggcacc gtgccgatg     719
```

(2) INFORMATION FOR SEQ ID NO:438

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 492 base pairs

(B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...492

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:438

```
cactattgtc cgggttgtag ccacggagtt gtgcacaaac tcatcgcaga gtaatcgaag      60
aaatgggctt gacggaagaa actatcggca tcgcccccta ggatgctcag tattcgccta     120
tcgctacatc gatatcgact ggcaagagct gcccacggcc gtgcaccggc tctggctaca     180
gcagtaaagc gtctgatccc tctaagctgg tatttacata tcagggcgac ggagacttgg     240
ctgcttcgga acagccgaga ccatccacgc agccaaccga ggagaaaaca tngcattata     300
ttcatcaaca acggtatcta cggtatgacc ggaggtcaga tggtccgact acccttgaag     360
gtatgggtac cggntacttg ccctcaggga agaacgtaga gctgaaccgg tattccgctg     420
aagattgccg atatgcttgc tttgctcgac ggtacttggc tcgtaacgcg ccaagaaccg     480
tgcacaatgc gc                                                         492
```


(2) INFORMATION FOR SEQ ID NO:439

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1699 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1699

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:439

```
gatttctttg aaagcatatg atgactttct accatcggca cgcaccaaca cagctctccg      60
gaaggcaata catcggcaat tatggcatcg aaacgccctc cttattttgg aagggatggt     120
accctaccct cctgtaaaga cactgcaata acgagtgtga agctggtcgg cagtatgctc     180
ttctatgtgt ctgtaggtga acgcatctcc tgcataaaag agcggaatat ctctatacga     240
tctacgaatg ccccagaatg atccggaccg atgtaggatt ggggagatag ctcgatagtc     300
gctttcgttg atattgagac cgacacccag aatgctgtag tcgggttgct gcccgtcagg     360
ctgtgctcga tcagtatgcc tgctattttc cttctccata gtatatatcg ttcggccatt     420
tgatgctgag catctcggca gaggaagaag gtcgtagagt gtatggagca cggagagtgc     480
acacaatcgg agagatcgaa ttgctgctgt gcaggaagca tggtcggcct cagcagaacg     540
```

```
aaaaggtcag gttcaagccc ggagacgcga accagctatt gccctgcttc ctcgtcccgc    600
agtctgattg tctgtcatga ccacggtcca cgcaggtggt cgggatcctg catcaaaaga    660
tcggacagat agggagttgg tgctggccgt ttcgggcaga tggatcagat acccttcaga    720
ccaactgttc ttcttgactc catcgaaagg cggttgtgta cggatgtatt tagggagttt    780
ggatcaacga gagcgtacga atgtcggatg agccgtgcaa tcagatcggc agggcatccg    840
agtccaaagc tacgctgttc caatgtcgtt tgttcatatg aaagcccccg tgataccctc    900
gtagtgcatc cttaaatgtt cggaccgatc ggatcgcatt tgagtgcgat gactttcttt    960
tcggaatcaa ggggtatcag gcaaacattt tgccggctac tttcataacc aacgtaacat   1020
catcgaacgg aaactctcct ccacctgtgg cagtgacaag catagctctc gagcttgcct   1080
atgtccatat attattttat ttttgctacg ttatgaattt cgctccattt tgcttggggc   1140
acggtctaac aaaaataatg gaaaaactca tttttgcaca aacaatccac ataagctcaa   1200
cgagattcgt catattcttg agggaaggtg nagattgtcg gnctggacga aataggttgt   1260
cggnaggata ttccgaaacg gccgacacan tacagggaca atgctttgct caaagcagaa   1320
tttttcacaa acgatatggt ttaccttgct ttgctgacga cacaggcttg gagtagaagc   1380
tcttgacaga gcanccggcg tccactctgc acggtacgca gagaaccgac caatgccnat   1440
gccaatgtac ggaaactact cnaagcattg gcagtgtacc acatcccaga aaagcatgct   1500
tccgtaccgt gatcgcccta tcgatgatca tggaaaacac ttcttcgaag ggaagatcga   1560
aggtaccaag catntgaatg cagaggatcg ggcggcttcg gctatgaccc cgttttctcc   1620
cggagggaca cacgctcagc tttgcagaaa tgggagaaga aaccaaaatc aaatcagtca   1680
tcgtgctttg gcggtggca                                                1699
```

(2) INFORMATION FOR SEQ ID NO:440

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 917 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...917

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:440

```
ggctgcgatg tctataccac tctcgacatg gatatgcaga gcatagtcga gtggagttgc    60
gcagcaagct cgaagaggtg cagggagaaa gtggaacccc atcctcatgg aggtagctac   120
agggcaggta aaggctatca ccaatctcag cgcacgccct ccggcggata tatcgaatcc   180
aagaactacg cagtagcgat atgtcagaac ccggttctac gttcaagacc gtgtcgatga   240
tggtacactc gatgccggca ttgtgcatcc ggaggacatc atcgaaacgg gcaaggtctc   300
ttctccgtag gcaagcgtac tgtaagagac cataatgcac acaaggaggg tatggccccc   360
ttacggcagc tcagacgatt tggtactcaa gcacgtaggc gtagccaaaa tcattctcaa   420
aggctttgcc cacgatcccg aaaatacgtg gaggcggtca ggcgaaccgg tatcacggac   480
aagttccgtc ggaaataccc ggagaagctc cggccgtagt gcgcaagcgt gccgacaatc   540
tgaccgctgg tatggcacga cccttgcatg gatgtcattc ggatacgaac ccaaatcccg   600
ccgatccata cattggcttt ctacaatgcc gttgccacgg tggtagaatg atgcgtccct   660
acttcgtaac gaaagtgatg gatagaggga ggtcgtacag gagcaccggc cggtagtatt   720
acgcgattcc atctgaagca ctctacgctt atcgccatac aggatatgct ctcgaacgta   780
gtggcaaagg gaccggctcg ccggtcaaaa gctctacggt aaacatcagc ggcttgaccg   840
gtacagcgca gatctcacag ggcaaaagcg gttatcgtgc agtggcacca tgcacttggt   900
attctttctg tggttat                                                  917
```

(2) INFORMATION FOR SEQ ID NO:441

     (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 680 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...680

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:441

```
cggactggca cccgaacgac aaggtgtctt tcttcttcgg acgtcagtag cgcgtttcgg      60
agggatagaa tacgacatga accccgtaga gatctaccgt acagcgacct tgtggattac     120
atgacctgct atacttcggg cgtgaactcg catggaactt ccaccccgaa cagcagctgc     180
agctacaggt actcaagctt acaacaaccg cttcgccgac cgctaccacg tgacacccga     240
tgtcgtaccg ccacgagcta cccgctcctc tactcggcac agtggaacgg tacctcctcg     300
gaggagcact gcatatgcgt tacgccgtgt cgatggctca tcagcccaag agcgtaatat     360
gtggtacttc actgcgggca acctgttcaa tcgggcaaac ggatcaacgg atacctcgac     420
ctcacctact cgatcgaggg atggacgaca aaggcattat gactgctcgc tacggcaagg     480
gcaagaccct acggacgtca agtactatgc tctggtatcg aagtggaact tccgcatttc     540
gatcaggtca atctcttcct caaaggcatg tacgagaacg gctatgcgct gcccaatacg     600
gcgagagcag ccacacgcgc caactcctac ggctataggg aagggtggaa tattacccct     660
acggagacca actttccgtc                                                 680
```

(2) INFORMATION FOR SEQ ID NO:442

     (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 855 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...855

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:442

```
ctgggttata acggtgtttt tttggctttc actcgccaca atggtaatcc cttgtcgttc      60
```

```
ttggccagct cttttgatcaa ttccatcggg ataccgaagg gtagcgtacc aaaacggctg    120
cagagcgttc gtactcagcg atagcaccac aggacctgca gggggattcg tttcctggaa    180
tgctcgttgc atctctctgt tgcaaattga ccgtttgttc ggtctgcttg catttgcgtt    240
tgggcattgc gggcagttgg aagagtccca atgccagaat caaggcttta gccttaaaag    300
cttttcatt gtttgatatg ttttatgatg ttatgaatat gttctgaaca tatgataaga    360
tctcggggaa ataataaaga gggacatggg ccatctttt gcgaaatatc catggaggga    420
tttaccttcg gtttttcacc tcaacccgat aaccgcccgt aaaattagaa gaaatcatca    480
atatgaaata aataaacctg ttttcttgct ttttgagccc tttgcaaaaa gagaaggtct    540
caagaagtat cttttcggta tcgtttttgc tcacctatag agtgtatcca caagtcatgg    600
aggaggcttt agaggtattc atatctataa tgacactaaa aatcagtcaa ttgacaatga    660
aatctcccgg aaaatgccgt gcgacatctt atctatcggg ttcacagctc gcacggaacc    720
tccacttccc gatccgccat ccgacacaga gcagatagca tcttccatca atagaccata    780
gtatctctca taggagacca taatatcctc tcataggaga ccatagtatc ctccatgtga    840
gaccatagta tcctc                                                      855
```

(2) INFORMATION FOR SEQ ID NO:443

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 904 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...904

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:443

```
gtcgttgatc agtcccacta cgcgacaacc tttaggcgta tgtttacgga gaacttactg     60
cttggctgga agattatagt cttggagaaa tttgggagaa aatatcattg gtggacaacc    120
ttgggctaag tagtgagatg gggaatagaa aaaacggctt gttttattg tcgagggaga    180
tacagaggtt gcctttccca tgaacgtgtg atcccatacc taatgagcaa aggctaccgc    240
aatgcatgaa tgcccagaag atcaccacca ataaatcgct tcataaaaag ggtgtatagc    300
ccgcttcgaa tacttggaaa atgaagttcg aagcgtagca gccaaggaga tatcttgatt    360
actactttgt tagacttctt caggctacca acaattttcc taactatact gcggatagcc    420
ataagatttc ggatatagag caggggttag acaaggtatt gatggggtta atgtttcgct    480
tttctatcca atattcagcg ccacgaacta gaggcactca tgtacacgag tatggatggt    540
ttgagatcgt ttgtgacgaa aaaagagagt tagatcagct gagagcaatg tagagggtta    600
cgataatccc gaagatatca attctggggc tgaaacccgc catctaagcg ccttatcaag    660
attttcccaa aatatgagaa ggttcttatg gagaactgat atttgaggct ttggagattg    720
atgctatacg agctcatgcc cccgtttcaa cgattggata caaatccttg aggacggatt    780
aaagaaggat actttttaagc cagattttt attatacttt tttaagggac tttagctctt    840
gtactctttt cgataaagaa tatcgctcaa tctatgcttg cacgcccgac aatgcgtaga    900
cttt                                                                  904
```

(2) INFORMATION FOR SEQ ID NO:444

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1071 base pairs
        (B) TYPE: nucleic acid

(C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1071

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:444

```
gcgtcatgaa tgctgcgaaa gctttagccg agatcggtct ggaatcgggg aacgaatcgg      60
tatctattcc cccaatatgg tacactgtct gtataccggt tgggggcctt cgccatgcgg     120
ggtgtagtag tgcctttgta tgccacagct caccggaaca gttacggttc atcgtggagg     180
attcatccat ggagacttgt ttgtcggaga gcagttccaa tacaacaatg cttatcgggt     240
acagaagaat atggtacgct aaagcgcata gtcgtattcg atgagcgcgt ggtgtcaatc     300
cggaggataa gacttcgaaa tactttttccg aatttgttcg tttggtgatt ccatgccgaa    360
cgagacgaag gtcaaagtct cttctcgcga agcattcctt ccgatccggc actgatcatc     420
tatacatcgg gcacttccgg tggagcaagg gcgtcctcct cctgcacagc aatctgatgt     480
atcagatgaa gtccatagcg agcatatccc cgtctatggg ccgggcgagc tgtcgatagt     540
ttcctgccga tgagtcatat tttcgaaaag gcatggacac tcttttgctg acgacgggaa     600
cgaggattgc catcttgaga gatccgaaga aagtattgag gcactacctc agatacgccc     660
atcgctcatg tgcaacgtgc cacgctttgg gagaaagtgt atcagggcgt gaatgagaag     720
atggcctcct ctcccgcatc ctgaaaggtg tctacaggcg tgctatggcc gtaggccaac     780
gctacgtctc gactattgga atgaggggaa gcgtgcgcca ctgcttctga gtagcaatat     840
gcctttaca actgcactat ttttaccctg ctcaagcgcg tatgggacta cagcgagggc      900
gttatttccc cacggncgga gcaccgctat cgatgagatc aacatcttcc ttcagtccgt     960
aaacattccc atcattgtcg atatggtctg tccgaaacga ctgccacggt atctttctat    1020
ccgcagcgag attcaagatc ggctncatgg gcaaagtgat gccgggctgg a             1071
```

(2) INFORMATION FOR SEQ ID NO:445

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 1999 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1999

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:445

```
cgcgcacaaa aaagatggct cgctcatcgt tgtcattctc ctgcttgggt tgatgtcgta      60
```

```
catcgtcttg cgcttgaaga aatcatcatt gtcgatgaat aaacctgcat gcgggccgac    120
tggatggaag ccactttgat gatcaacgat ggtcgttgtc gttaatgatc atattgatgc    180
cggaaaggcg tatcactcgt gcaactgatt gcgacgctca ttgatgatgc catagcgggg    240
cataaaatgc gcacctcgtt gcctcgctcc tgaatggtct gaggcaattt gcgcaaacga    300
ccgatatgtc cgtttccggc aagtagggga aaatttcttg ggaatgtaaa gaattttttt    360
ggaatccatt cttttaccgt catctacgtt tctgcaaagg tacaaaaaaa actcatcggc    420
aagataagga agaagtacgt aagccctctt agataagtat aaaaagacca aatacctcaa    480
gaatcgcact caaaggctac cataaacaag ctcccaaaac cagacctaaa cggaggagac    540
aaagtgcgaa tcgagagaca aaccactcaa ggatgagcac ctgattatag aggattaagc    600
caaaagatcc gacaagatgg gaaaagaaat agccgaaaag aaccggctgg ggatcgccac    660
cttttcacga gccaaaaaac ggcgaccacc ggccctaaaa atgcggcgcg taaaagtttt    720
ccttttggtg cgagaaagaa aaatttacgc gccacaacga aaaaaatctc gcgtcacttt    780
tcccaaaaca cgaaccgcaa tcgcagcttt tgcggttccg gaattgtcgg agacggctga    840
ggttcgagac agacggttgg gcgtattatt cgtactttcg tgatgatttt cacacgctgc    900
accggattat tatccggggt tagtccacag gtgtctgaat ttggaatgca gagaatcata    960
tagaatacag aacgagaaca agatgagcga agagctgcaa cacttgtcac cgggtgaacg   1020
tctctatccc tctccaccga tatgaaagag gttcccgatc gttatttgca cggggaaggt   1080
acgaccatga gcagagtgat gagatcggga gagaggaaga agacttttc ctcctatgcc    1140
ggaggaggtt tccaatgaga tcgaagctcc gtctctcata cgccggagga ggttttgcta   1200
cactattggg gctacccttc gttcagcctg tgcagctccc gatcatcgaa tccgttttgg   1260
cagggaagga cacatgggac tactgccggg gggtggtggt aagagtatca cgttccaagt   1320
cccgggctgc tactgccggg tttgactctc gtggtaacgc cactgattgc tcgatgcggg   1380
accagatcat gggattgcgc caaaagggga tcaaggcgac accgttcatg ccggaatgac   1440
gcgcgagcag attatcacca cgctggacaa tgtatttacg gccgctacaa atttctatac   1500
gtttcgcccg aacgtctggc tcggaacttt tcctcagccg tctgcatgct ctcagggtaa   1560
gtctgctgtc gtagacgaat gtcactgtat atcccagtgg ggctatgact tccggccgca   1620
tacctctcga tagcagacat cagggaggcc ctgccggatg ttcccgattg gcattgactg   1680
ctacggctac acggccggtg atcgacgaca tacaagcatc ctccgatttc cggagccgaa   1740
cgtgctgaga aaaagctttt tccgcccaat ctgtcgtatt ccatccgccg gacggcagac   1800
aaagagacga tgcgctgcat atcctcagnc gcgtggacgg ttcggccgtc gtatactgtc   1860
gcaccgagat aaggcgcgcg atctggcacg cttctcggcg aaaacggctt ccggccgatt   1920
tctatcacgc cggtctcacc atgtgacacg ggaaatacgg aaaaaagctg gatggaaggg   1980
gaacgccgga tcatcgtct                                                 1999
```

(2) INFORMATION FOR SEQ ID NO:446

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 465 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...465

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:446

```
gagccagatc ttctttggtg agccagccat tattgtaggc aatctcctca agcaggcgat     60
cttcaagcct tggcgtttct ctatgaccga tacaaaaagg aagcatctgt cagtgattcg    120
tgtgtacctg tatccagcca ggcaaaacac gccccagttg ctggagacgg agctgcttgc    180
gaagcatgaa ctcctgttga ctgaggttat ttccaattcg ccccgcgccg atggtttgac    240
```

```
atctgtgcta catcaagtac atcattggga tagaaataga gtcccactac tgcgagttgc     300
tcttcggctt ttccggtttt tcttccaggc tgatgaactt gccgtagcat ccacttccgc     360
tacaccgtat cgctcaggat cattcacata atgccgaaaa tggtggccat acccttttcc     420
gcatcggcaa ctgccgaccg agcatttggc tgaagccatg cccgt                     465
```

(2) INFORMATION FOR SEQ ID NO:447

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 532 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...532

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:447

```
accaagacat ggcgcagctc tgtcggtgga tgggatatct atatggcacg aaaggctatg      60
ccgtctttac ggtggatagt cgcggatctg ccaatagagg gctgctttcg agcaggttat     120
tcatcgtcgt ttggggcaga ccgagatgcc gatcagatgt gcggtgtgga tttcctcaag     180
agccaatcat gggtggtgcc gatagaatag gagtacatgg ctggagctat ggtggcttta     240
tgactcgaat ctgatgctta cgcacggcga tgtcttcaaa gtcggagtag ccggggggcct     300
gtcatagact ggaatcgata tgagattatg tacggtgagc gtttttcgat gcgccacagg     360
aaaatcccga aggatacgat gctgccaacc tgtcaaacga gccggtgatc tgaaaggacg     420
acttatgctg attcatggag catcgatccg gtcgtggtat ggcagcattc actccttttc     480
cttgatgctt cgtgaaggca cgcacctatc ctgactctta cgtctatccg ag             532
```

(2) INFORMATION FOR SEQ ID NO:448

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 902 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...902

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:448

```
ggaaaactat catcaagact atttggatca taaccctcgc ggttattgta tatcgatcct      60
tctttattcg aattggcgag gaaagccaat ccggccagtt ctacaagaag gccgatgatg     120
cagagcttcg tgcccggctt acccccggca gtatgccgtc acacgcaaca atgccaccga     180
accggctttt gacaacagta ttggaatgaa tttcgagaag gtatttatgt cgatgttact     240
acagggaacc gctatttctt tctactgata agttcgactc cggctgtgga tggcgagttt     300
cagcaagccg atagggaaag agctgatttc cgagcgtatc gatgttcttt cggaatgact     360
cgtacagaag tgcgtagtac gaccggcgat gccatttggg acacttgttc aatgacgggc     420
cactggaaga aaggcggact cgttattgca tcaatagtgc ctcccttcgg tttattccca     480
aagaggatat aagaaagaag gctatggcag tcttcttcct cttttgaaca aacgatgaga     540
tgctcttgta gcatataatg attcccaatc gtctcagata agactaactc caatggcata     600
tctcggaacc aaagccaagt ggctgttact actctcccca tcgtgcttct tgcaatagtc     660
ggagtctgga tttttcaata ttccggtatg gggagcgatt cgaaattgtc gacgaattgg     720
gtggcaatat ctttcgtccg ccatactgtc ggtggccacg accgatgctg aagtaatcaa     780
accgtcgaag gcctgtacgt gggcaatccg aagtccgtta tcagtattcg cctaaaacgc     840
gaagggccaa tagccgtgtg cgtgtggaag tagccgaaac gctttttct cccaggggga     900
tc                                                                    902
```

(2) INFORMATION FOR SEQ ID NO:449

     (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1731 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1731

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:449

```
atccttcggt ttaggggttt attgccaaag ataaagagaa gtccccgtaa tttgtctgca      60
attatccaga tagtatgact accaagggag gaataccacg tcgatgtcct gcgagttctg     120
gcaggattga tggtaatcgg catccatctt cgggagaata cgttctcgaa ggagtggctg     180
agggtgcaaa ctttatgccg gtctatgctg ggaggcggtc gtgcagccgg ccgttcctat     240
attcgcatta tcagcggggc ttttgtcttg ggacgcaatg agacgtgggg agattctatc     300
ggaaacgaat accgcgactg ctggtactac tcgcttttg gctccgttct attggctgtg     360
gctgtggctc aagggcgatg atataggttc cttcttgccg gcttttggca gggacgctca     420
ttcgttcatc tgtggtatgt gtgatgctgc tgggacttta tgcagtcgtt cctctgctca     480
acgaaataat cgcaggtgcg aagccgatgg agagaaggct gctcgtaaac gactttggat     540
ctctctacca tattgctact gctggggata ttgtccaaca cctacgatac atactcggtt     600
acaaccgctt tttcccttttt ctttggccgg attatttgga tatttccttg tgggttatac     660
cctgaagagc catgctccgc agcgttttta ccggctcttt ccttgtacgg actctctacg     720
atttctcttt tcttccaagt cggtacgctt tcgagcacgg cgaagggcta tacttctacc     780
gtaactctct cctttgattg ttctttctgc tatcagtctc ttcgcgttct tcgttcttgg     840
ggaggatgtg gaggaaaatt ggcgcggatc gggaaaatgc aggggatatt ttaggaatct     900
acttagtaca catcgctgtg ctgaacgtgg tacaaaaata cttgtactga ccaccccag     960
cctgatgcaa tgcgcatggc caacataccg atccgtgtag gattggtttt cttcgtttct    1020
tggggagttt gcggctgatg aagcggttgc cgatatgccg ctatttggtc tagatcagcc    1080
gataccggtt ctattgtacc cgtttcttcg acctctctat atcgttcccc gtttcaggac    1140
agacggccat cccccttgtca tcgaacgaca agcggtaccg gc'gcggctta cccaaccgat    1200
```

```
ccggcgagca ggattgccca ctaccaggca tagggcggta catccctaat caccacggtt     1260
cctgcaccta ccatgcataa gcccctatcg taataccaca aagaatagtg gcattggctc     1320
cgaggagacg ccttcgtgca aatgagtggg gcggtattcg gattttcttt cataaaggcg     1380
cgaggattga tcacgttggt aaatacacaa ctcggtccga gaatacgtaa tcttcgcata     1440
tgacaccact atacagagaa acgttgttct caccttacag cctcgcccca gtcgtacctc     1500
cggcattata acgacattcg cccgatgttg caattctctc cgacctcggc tccgcacatc     1560
aagtgagaaa gtgccatacg cgtgtaccct gaccaagcac acaaccgtct tctactacgc     1620
tgtgggatgg atcataaaga cctgctatca attggcgatc aactgtcggc acgttctacc     1680
gatgaacgga atgaggcatt catctccatc tcgttgtcac acagcgacag c              1731
```

(2) INFORMATION FOR SEQ ID NO:450

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 424 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...424

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:450

```
agtacccgga gcgggcaaga gttcttcgat cgatgctttc ggtatgcatt catcaagcan      60
gggcggaagc ttgccgtgct ggccatagac cccagcagga gagatccaaa gggagtattc     120
tgggcgataa gacccgtatg gagcagcctc tcgagagaag aatgccttta ttcgtcccag     180
tcctgctgcc ggttcgtggg tggcgtggca cgcaagacgc gtgagaccat cgtgctgtgt     240
gaagcgccgg attcgacacg atctttgtag agacggtagg angtgggaca gagcaaactg     300
ctgttcattc gatggtggac ttcttcctgc tgatccaact ggcggtacgg gggatgaact     360
tcagggtatc aagcgcggga ttatggagat tgcccgatgg gtattcatcg tcaataaaag     420
cgga                                                                   424
```

(2) INFORMATION FOR SEQ ID NO:451

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2521 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:

(2) INFORMATION FOR SEQ ID NO:1

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 610 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...610

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1

```
gagcataccg cccggccagc gttctaccac atagggcatt cccactgatt ggccaattcg      60
gcgataggtt ctttggcctg cttcttcgtg gcaacgaaag aatcttcttg ccatttttgg     120
ccataccctt aataacttcg gctgcttgtc tactttagca actgttttgt gcaggtcgat     180
aatatgaata tcgttggctc cataaagata tacggagcca taagccggat tccactttct     240
cttgagtgtc cgaagtgagc accggcttcc aataattgat caaaagaaat tcttacattt     300
tcgtttacgt tctttgtaat gattactgtt tgcaatccaa accgtagagc agactcgaaa     360
agaaatgaat tacccccgaa tgcaatccga tgatttagat actaaacgcg agaaatatcc     420
tctaaggaca ttaacgctta cgaattggaa tctcttgcga gctttgggac gtcccggttt     480
cttacgttct ccacgcgagg atcgcgagtg atgaagcctt ctgaacgcaa agcgggtttt     540
cgtccggatt gatcttgacc agtgcacggg ccgatagcca agcgagcact cgttctgacc     600
tttgaaacca                                                          610
```

(2) INFORMATION FOR SEQ ID NO:2

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 628 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...628

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:2

```
tcttccgctt tttttggaat actcattcgc atcgaaagct ctacagagct caaggatgcg      60
gagaggatta gtttgacacc cgctcaaagc tattttgcga gcgggtgttg cgctttctgc     120
```

```
ttgcagtcca ataaacctga tgcccttccg gcgtctatct aagcataaac gacaaaaaca    180
cattagtcaa actttagaaa acattgtatg aacaaagtgt ggaaatacgt gacgggagcc    240
tttggatagc agccgtcagc gcagtagcat cggtggcaac agtggctgct ttggaccctt    300
ccgagggtgg aattcttcat aaccgatggt acggaaaacg aatcggattc aagcagacat    360
cttacacaac gacatccgga gccttcgccg cttgcccaat ttggtcggag ctgcagaagc    420
atcggtacac gccgtagtac aatcaaagtg gagtccgagc agcgaatgga ctcttcagca    480
gtacttcgat cgttctgaat tcttcttcgg aggcgaatcc agaaactttc agcgtcccca    540
acacggcagg tagtaggcta cggttcgggg gtgatcatca tgcacagagg atatatcatc    600
acgaataatc atgtagtaaa gggagcca                                       628
```

(2) INFORMATION FOR SEQ ID NO:3

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 970 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...970

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3

```
gacttcttta ccccgctaaa agtaacctta ctgatgcgag gacgttcagg acaatgattt     60
tcagatagac tttattgccg acatatttat ccgcgatgtt cgcacatttg agaagtagcc    120
ctgacgcata attctattca cggcagcgac atggcatctc caggaatcag gacttcatca    180
cctacagcca agcctgaaga ttgcgcaaga caaagtcatc gaaagacctc attccctcga    240
tctcatagat gctatggtct tatgaatagg cttggcatag gatatttcag ggcttatata    300
tggatctccg tgaggggtca gatccgagga ctgtcctttc aggtccctat gctggcgcag    360
aagagagctg ctacggcaat aatctttttg taatagtctt tctcaaatga ttcaatattt    420
attttctctg agagcgattt gtcgctggtc ttgccgaatc gacgctccct cgatgaatat    480
tcttctatgg tgccttcaga cagtcggcat caaagtccgg ccaaagcgta tcggtaaaaa    540
caattccgta taggccattt gccacataag aaaatgctga tacgcttcct ccacctgtac    600
gaatgaagag atccggatcc ggaatgcccg cggtggaaga tgatcagaaa ccaaatcgac    660
atttatatct tcaggctcca cacttcatcc cgaacctttc gagccaatct acggatgaca    720
tcggtcattt cccaggagaa ctgtagctaa gggccaaaac caaagtcagc cccgtgtttc    780
cggcgtctct cgaataccct tttctaacga ttcacggaca tcctcgggga gccactgaaa    840
tcgccgatag ccaagaggcg aatgttattg gtcatcaagt ccgcatctca ttcatgataa    900
gctgtaacga aaaggcccat cagcgccctg attcctcttt cggacgattc caattcttcg    960
tactgaaagg                                                           970
```

(2) INFORMATION FOR SEQ ID NO:4

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 576 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...576

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:4

```
agccgcacga ttggaaaaga aactggagca actcacagcc taacggcgca gagcctgtgc      60
ttgagacgct gcagaagacc gggatgattc tccggatccc tgaggtcaat gtctgggaaa     120
gattcttttc ggatacgatc agtagcagtc tcccacttgc aagtgcatac gcccttcgg     180
tacacgataa gccctccctc ttcgtaccag gatgacaagc tcttcatcac gaagagaaag     240
attcacagca gatcgccatg ggacagcatg gaagcatcca ccactctctc ctccacttgg     300
ttcccgtctc ttccggtatt tccacaccga acaggctacc tatggcggcg aaggaatatc     360
cagtccgagc caacgtgcta cctgggagat cgactcccct gtacgagcag agagagtatg     420
gtaatgaaga agacgacatt gaaagctgat ccgctccggg gatattatcg atcatgggat     480
aggtggcaaa atgataggaa cggctccgcg caatccgacc cagctgagaa aggtcttacc     540
ctgaatgata ttttgcggaa gggaatcagg cagaaa                               576
```


(2) INFORMATION FOR SEQ ID NO:5

        (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 588 base pairs
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: double
             (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...588

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:5

```
gctttcatct ctattctcct tttttattct attgtgtttt tttcatattc tcttcggaca      60
tagccgtttc cgcatacaag gcttcctctt cccatccggc atttccacaa actccccctc     120
cgcatcagcc ccgcgatcga gacaatatcc aatagctcca tggcgtaggc cgtttcccgg     180
acggcttcgt cccgatgaga gcgatcccgt tcctgttgga cgaaagtcgt cccaccgtat     240
tcagcccacc gccacaccta tggccagtgc caaagccaca caagctacag cccctagcgt     300
accaaccgaa gcgacaaccg ccttgaagga tgccggacac gatctcccaa ctcgccatct     360
tttccaagag aactttgtcc gaatcatctt cctngcccgt ttcacgctca ggaagaccga     420
tcaaagcccg caaaagctgc agtccgaatg atagggagcc ggatccggca atcccttcag     480
caagcaatac gctccaactc ctcttgcgga aaatggtacc ggcataaaaa ctttncagtg     540
ccggtcgatt ttattctctc ttacgcatca tcttatcacc tcctagct                  588
```


(2) INFORMATION FOR SEQ ID NO:6

(i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 473 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...473

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:6

```
aacacaaaac tttagaaggg agtcttacac ttcgtcccat cgagtgtctt cctttaccgg      60
tagtttcatg agtggcaaga ccgctgccct gaatgatgtc ccatcaaaat caatagcaaa     120
cagattatgg ccggagattt atacgacgat cccgctggag tgtaggaggt atgttccgtt     180
ccaaatactt ggatctcgta gntgaaatac cttcgaaggc aaagacgatg acatgattag     240
taaggctttt acgtcacagg ggtaggacga ttgttcaaaa acctcgatat catcgatcat     300
atgacttcat ggatttgtac gaaaggcaac atgtctcata atataccgcc ggccttcaag     360
tactggttct tcccaaagtg tcgtttgcag gccagtatgt attgagcaat ccgaaaggcg     420
agtacaacaa cacacacgct cgctaacaca ggtgcaggta gcattctgac agc            473
```


(2) INFORMATION FOR SEQ ID NO:7

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 625 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...625

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:7

```
tcttattata gaatttgatg atttcgttaa tcatttcttt ctcctccggt ctccctccgt      60
agtggtgagg gctaccgctt tcgagagctc atccacggca tatcgtattt cttcttgctg     120
atacctctgg taacgatgcc ggtactttga ccagcaattt tgaaaacggt gacaatatct     180
tatagataac ggacatgctg cagcagaaaa gcgcgagtat tgcagcggat tcttccgcgc     240
atacatttcg gcagaatctc ttcgaacagc aaaaggacca gtggccagga gtatgtctgg     300
atcagaaatc caatgatcgg agaagagaaa acgaatgtct gctgatggca taattggaaa     360
ggataacgat ggctacatta atcacattat tccgatcaga atagtagcta atagctgatt    .420
```

```
cgaattgtct aataaattgg aagcgcgatg tcggaagagt gattccgttc gcggatgttc    480
tgcagatcga cggctttagt gaaaaataag ccacctcaca ggaggacata aaagccgaaa    540
gcaaagaaga agcaggtcga taatgaaagc cactatggct gctgcaccat aggatgaccc    600
gaagcccttc aaaaaatcag tataa                                          625
```

(2) INFORMATION FOR SEQ ID NO:8

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 962 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...962

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:8

```
ggggatttgg ggcaagataa gttactttgt agagcttgaa tggcaaacag ggatttctgc     60
ctattttcca aaaatctgca tcgtcgattc ttgaaacggt tgagagccaa cggggggcgca    120
aggagtttgt tctggttggc cacccgagag cttcgtctcc ggggagagtt ttaattatct    180
tatcgggcaa cttaaagcag ctatcagttc ttgagcatga cagagttgta tgatcagagg    240
ctaaaatagg cacaaagaaa ggcgtcaagg atactcataa gcccgaaaca cctgcccaga    300
aggaccatct ccagagggac ctgaagctgg tttgtaatta gttatagaag ctcaccccag    360
tagaggtagc gagtttttgct ggggtgagtg tcatctgtta ttgtttagtc attacgaccc    420
aatagatggg tattatcaaa atccatatta gatatgctta atgcaattta tttttaccga    480
ttgtctcatt gctttatcgt catcatatcc cgatattgcc aaagttaatc acattgctct    540
cttcctcatt tataatagca agatacctcc tcaagctaag ataggcaagg atctaagttc    600
ggttatggag ggataagtgt tgtggtacat catgactggt gataggagaa aattgtagta    660
ttggtcacgt tgttactata ggaggagtaa ttcgaagtat ccaggagtcc ctgttatagg    720
aaataatgtc cagatagccg aggaagtgtg gtttttggcg ggataaccat tggtaataac    780
gttgtatagg agccaataca gtagttaatt ttcctgtccc agacaatgct gttttgaagg    840
caatcctggt cgtattgtgc atattaagga aagtacatgt tacatcattc ctcaaactta    900
aaacctattg ngaacaagaa ggcttcaaag gtgggatccg tacgatggat tgaactccag    960
gg                                                                    962
```

(2) INFORMATION FOR SEQ ID NO:9

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 605 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

```
        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...605

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:9

agcagccggc cggccaacgg aaagcttcgc cccccatggc ggcacgaata tttcgataga       60
cacgtaagaa gggctttgga aagacgagcg accacgtact tgataatgtt ggctcccccc      120
ttcacgacac gctgtttcag ttctgccact gctcgttggt cagcttgtcg gtaccgatca      180
gatcggtcag aggcgtccgt ttaccttggc cgtgctggcg aaaacagcca tctgctcgcc      240
atgactccat aagtacgcgt gttggtcacg agactttgtt tgatgccgaa gtgctagcca      300
gttcgctttg cagacgtgtg ctgtccaaac cggccaaagt agtacctgcg aaggcttcag      360
cccggagtag ataagcgtaa caagaccggt gagtcagccg gattgaagat gatgatcacg      420
tgcttacagt cgggacaata gtcttgatgt ccttgcccag ctgagcagcg atttcggcat      480
tgcccttgag agatcctcgc gggtcatacc ctctttgcgc ggagcaccgg ccgaagaaat      540
atatatttgg catctgtaag agcctcttga tgtcngatgt aaaagtcaat tcaggccttc      600
gaatc                                                                  605


(2) INFORMATION FOR SEQ ID NO:10

        (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 688 base pairs
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: double
             (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...688

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:10

cctgagccac acactggtct ataatggcat tggacacttc ggccagacgt atacgttggc       60
ctcgcgagca cgatagtcac ctcctttgat cgtatcgtga agagtcgata aacggagtcg      120
ccgtcgttct ggtagttctt ggcggcatga tacctccctg tgcagcgatg gagtgcgcac      180
ggcgaggaga atcctgatgc agaagttaag cacattgaag cccatctcgc cgaaagaagc      240
agcagcgaag caccggccag gccggtaccg accacgataa tatccagacg acgttgttgg      300
ccgggttcac cagcttctga tgatccttat agttggtcca ctttctttca gcgggccggc      360
gggtattttg gaatttattg tagccatagt gaaatacttt gaattagggt gtactatcaa      420
ccgatgaatg cctgacaagc aatactatca ggaccaaagc gaaaccgcct accaatacgg      480
tagaaaccac ttagagatgc acttgacacg attcatccag atggtattgt tccatcccag      540
gtctgcagtg cactccagaa tccatgtgtc aggtggaacc acaaagcatc agccatacgg      600
catagagcac cacgtagatc ggttggttga atgtgtacgg atcagctctg ctcccttggc      660
cggatggtcg aaaccatcaa taccgatc                                         688


(2) INFORMATION FOR SEQ ID NO:11

        (i) SEQUENCE CHARACTERISTICS:
```

(A) LENGTH: 1593 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1593

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:11

ggtcgttcag ctccgagtag gcgttggcca actccttgcc attgaccata gctcgaatcg   60
ctctgtcagc tccggattgg tgcggtgctc cttcgtcaag gcgacatttc tttcggatag   120
tctgtgatga aagtaggctg gatatagtct tctcgcactt ctcgccgaag atctcatcga   180
tgagcttgcc tttgccatcg tttcattgtg ctctacgccc agcttgtcgc atacctgacg   240
cagctggcct cgttcattcc gctgatgtcg atacccgtat gctcatggat ggctcgatca   300
tggtcactcg cttgtagggg gccttgaagt cgatcaattt cccccacct tcatctgagt   360
agtacccagc acatccatac agatgcgttc gacatctgct ccgtaaagtt catcatccag   420
ttgtaatcct tatacgccac aagatctcca tggccgtgaa ctcaggatta tgcgtgcggt   480
ccatcccctc tttcggaaat tgcggctgaa ttcatacaca ccatcgaaac cgcccacgac   540
agacgcttca gatacaattc gttagcgatt ctcagataga gcggaatgcc agagcgttat   600
gatgcgtgat aaaaggacgc gcagctgcac ctcccggatc gattggagta caggtgtatc   660
cacttcgatg tatccgcact cattgagaaa ctgcgcatcg aaatggaata ccatcgtacg   720
cttgagggaa aatgttttga catgactatt gacgaccaga tccacgtatc gcttgacgat   780
aacgtgctcc ggatccgtga agccatcgaa gacctcccca tcttttcctt ttacacagga   840
aggggggcgga tagctttcga caagaaagtc atctcctgca cagcaccgat atttctccca   900
tctgagtgcg gaatacgtac cctttcactc cataaaatca cctatatccg tacacttctt   960
gaccaccgta ttgtagaact cttatcctca cccggacaaa tatcgtcccg agtaatatag   1020
atctggatag cccctcagca tcttgcagct ccatgaatgt agctttcccc atgatacgcg   1080
gctcataata cgtccggcaa tgcttacttg acgtttggcg acattctatc gccattgaaa   1140
ttcctttga tctcggcgga ataggcattg acggtaattc cgctgcagga tatggatcga   1200
tccccaaatt acgcagttgc tctaactgtt acggcgtacg acttcttgtt ccgaaagttc   1260
gagtatgttc atgcaaaact tctaatttat attcccctg cagcaacttg cttgctctgc   1320
tgctaaccga cacgatcgga gccattcgtc cgaggggaa aaccttggt tccaaaggta   1380
acttatttct atcagatacg ttccagaacc aaatcgataa gccctctata cttccctgat   1440
aggaggtatt catcttttcg gatttcctgc tgcgatgata caacagaccg tgatggcttc   1500
gtgccccatc agggcagccg accggccaaa gaggagcttt ccatttcata gttcgtaata   1560
cggctgcctt gaagtcgaaa gcctgtatct tcg   1593

(2) INFORMATION FOR SEQ ID NO:12

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1422 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...1422

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12

```
tcggtcatgc cctccacggt atgtttcccg cccagcagta tcctttgctt ccggtacgaa     60
tgtggcgcgt gacttcgtcg agatgccgtc tcagctcacg aacattgggc tatggatccg    120
gaagtgtttg ccaactacgc taagcacgga agacacagga gcctatgccg gccgaattgg    180
tcaagaagat tcaggagcga gcgacttcaa tcaggcttat tctatgggag aaaatcttgc    240
agccgaagcc tcgatcaggc atggcatacg ctcacggtcg aagagncgga ggccttaccg    300
acgtggccaa gttcgaagaa gaagccctgc gcaaagtcgg tcttacaatc cgcagatacc    360
tcctcgctat cgctcctctt atttccgcca tactggagca atggttatgc atccggttac    420
tacgcttatc tgtggacaga atgctggatc acaacgttta tcaatggatg gtgcaaaacg    480
gtggtatgac ccgcaaaacg gacaacgcct tcgggatatg attctttcgc gtggcaataa    540
caggatttca acgtgatctt caccgcgttc accggtctgc aaaagcctac atcagggatt    600
tgctccgcgc tcgcggtctc atgtaataca gcaatagcga ggctgtgctt tcaggttcca    660
agatcctgca agagcacagc ctcttttat tcaccctata ccaaaaacga aacagctacg    720
atgaaaaaag gagattactc atccttctga tcattatcct gatgttgggg cttatgcttt    780
cccctggaca tcggaaacat tcaactccct cagtcgccat tatccttatt atacggtttc    840
ctgaagtttg ccatcttggc taccatcggt gaagtactgg ccgacggatc aaagcccaac    900
gatacacctg ccccacctat ctatgggtgc gattgtgata tggggcattg tcggtatact    960
catcgtcttc aacttcgggt gtacgaagcc ggtatacgag gtatcatcgc aagaggactg   1020
ctccccgact cgacagttcg gtctatacgg ctttccttat ctcttccgcc atgaatctac   1080
attcggcccg gccttcatgg ccgcccaccg catcagcgat acatatcgga gaataaagct   1140
acaggacggg gaggaagcat ccggctcgcc gttgaagagt ggattggaat cgctttatga   1200
ctttcgtcgt tggcaagacc attccttctt ctggataccg gcacatacgg tcaccttttt   1260
acttccaccc gagtccgcgt ctttgtggct gcactcctgt ccatcgctct gggactgatc   1320
ttgccttggc ttcctcccga catgcaaagg cgtaaaacat cagggaccga caaaggattt   1380
gataccaaaa tgatgaaaat gccatgaagg aactgaaatg cc                       1422
```

(2) INFORMATION FOR SEQ ID NO:13

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 713 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...713

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:13

```
ggcagtagcc tgttcggcag canccgtggc ctcacgatcg cgcaggtttc caccataccc     60
tcgtattcga gtgctnccac acgattggcc agctctattc gcgtacctta tccgttgtac    120
ctgctccgat gctatccaaa tacctttgct ctggagctct gctcttcggc ggtcgttctg   ..180
```

```
catggctttg accttggttc gcgtcgcttg gcgttgagtt ctccgcggag ttgtacttcc      240
tgccgtgcag ttgggtctgc ttcatccgca gttcgtcctg caatttctcg aactcgtgcg      300
cacggactgc aagtccagtt ccaacaaggg ttcacctcgg tgtccgaatc gcctgcatgc      360
ttgagcacag ctatcagacg cgcctgcacc gggaagtgat gatctcctcg aaagccggca      420
ccacttcgcc ggaagccgag gagcgatctg cacttctcct ttgtccaccc gccccaaacg      480
cagagaggct cggatatgga gccttggatg gaggagagca accaccatcc gcctaagaaa      540
gaaggactgc cgaagctgtt atgattgagg taaccgtctt tgcttttccg ttgagccgtt      600
cggcgaaact tgtctgtcat gaatcggttt cttttttcgg tgcgagcctt tgttgctcgc      660
cggcttccga agagcaaatg ccatgcaaac aaatccctgg ccttattaat cag            713
```


(2) INFORMATION FOR SEQ ID NO:14

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1244 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1244

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:14

```
ggcatgaatc agttcaagga tatcatactc ggaaataccg aggctaaatc actcgtgtag       60
cagactcgca gaagtgtttg cgtgtaagcg gcaagcacac gacctcgaag aggtaggcca      120
tgacacctat catcatacca tgttcgaatg ctcggcaact ggtcgttcgg cgattacttc      180
aagaaagaag ccatcgatgg gcttgggaat acttggtgac ggtgttgggt ctggatcccc      240
agcgttctat gctaccgtat tcgaaggcaa ccccgaagaa ggccttgacc gcgaaacgaa      300
gcggcatctt actgggcaca gtttctgcct gaagaacgaa tcacaacggc aataagcatg      360
acaacttctg ggaaatgggc gataccggtc ccgcggtccc tgctcggaaa tacatatcga      420
cctgcgttcg gacgaagagc ggcccaaata aacggtttgg agctgatcaa taagagccat      480
ccgcaggtca tgagatatgg aacctcgtct tcatgcaata caatcggaaa gccgatgctc      540
cctgacgcct ctgccacaca aggtgatcga tacgggcatg ggattcgacg tctgtgtatg      600
gccttgcagg gcaagacttc caattacgat acggatgctt tcagcctctt atccgtactt      660
tggctacgat gacgggaatc ggatacgtga ggattctacc tcggatatag ccatgcgcgt      720
agtagccgac cacatcggac tatcgccttt gccatcacgg acggccaatt gccctccaat      780
gccaagccgg ctatgtcatt cgccgtatcc tgcgccgtgc ggttcgctac ggcacacctt      840
cctacactgc cgcgaagcgt tcatgtaccg attgctccg acctgatcga tacgatgggc      900
gatgcttatc ccgaattgca agcacagcgc gactgatcag ccgcgtgatc aaagaagagg      960
aagagagttt cctgcgtaca tggaaacggg tatccgcctg ctggagaaaa aaatagccga     1020
caataaggca ccggctccac cgtattggac ggtgtcgctg ccttcgaatt atacgatagt     1080
tcggatttcc cctcgacctc acagccctga tcctatcgga aaatgggtga cggtggacga     1140
atcaggcttc gacacggaga tgcagaagca aaaagacgtg cccgtaatgc cgctgccgta     1200
gaagccggcg aactgggtag tgctagtgag ggtgaatcca aatc                      1244
```


(2) INFORMATION FOR SEQ ID NO:15

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1845 base pairs
        (B) TYPE: nucleic acid

```
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1845

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:15
```

tcgcttgaag	cagcacgcac	atcatcgtag	ctgataccca	gttcgtctac	aagtctacac	60
tcatctctct	gctcatcctc	accaaatagt	tcagctgcta	ttgcgcggat	tgcgctgctc	120
cttgccatct	atatagatct	gattattctg	atgctcaatt	cttgtccggg	catacccaca	180
cagcgtttca	catagtgtcg	cgtctgtcca	cggggcggta	aacgatctcc	ccgtagaaat	240
ccggatactc	caaagctcct	cccgtcctac	gagtttcttc	cacatataat	aatcggattg	300
ggctgcttga	cggccaccgt	atcgcctgca	gggaagttaa	agacaccaaa	tccccctcct	360
tgacgtgtcc	gaaacccttc	agtcgcttgt	acgcaagaga	ggtttgtccg	agaacgattt	420
gccacccgtc	aatggcatcg	tttgtgcgtc	agcggcacac	cgagcggagt	cataggcgaa	480
cgcggtccgt	cgaaagcttg	ctcacgaaga	ggtagtcgcc	tataagcaag	gtcttctccg	540
cgaagaagtc	ggaatggcga	agttctgaaa	caggaaagcg	aagataaagt	aacggctacg	600
acacagtaga	taatgtctgc	cacccagctg	caaatgaccg	aagcgtcttg	tttcggatat	660
tcttatacca	gccccatttg	ataataggaa	gaaataataa	tctacgatca	aaggcagaaa	720
aatcagccaa	aacggccggc	ccatatacaa	aaaaggaggt	aaagaatagt	aatggcaacg	780
cctttatacg	acgccatggc	gtcaaatctt	tccaatggaa	ggtcatatcg	ttatctgttg	840
ttataagctg	attaaatcgt	tcatcgtcag	aaagcctttg	tggtggcagc	atattcggca	900
gccaacacgg	caccaagagc	gaatccctct	caccaaaagc	ttcgtggcat	atcgtcagcc	960
gatccacctc	ggatgtatag	atatgctgtg	cgtacccggg	acttcgcctt	ctcggatgga	1020
ggtgatcgga	gttcgttctc	ctccggtgtc	tccgtcagtc	tccaagcgtc	cagcgaggag	1080
attcggctat	caatccctcg	gccagtgtaa	tagccgttcc	gctcggacgt	ccaacttatg	1140
tacatgatgg	atttccgtca	ggtgaggacg	atactgtcgt	gccggctcat	caatcgggca	1200
aacatacgac	tgagcgagaa	aaaaaattga	ccccgatgct	gaagttcgaa	gcccagaaga	1260
gggtctttcc	ctccgtcggc	agcgttcttc	cagctcgggc	agacgctctg	tccaccccgt	1320
agtccgcaca	ccaccggcac	ggacttatcc	atacagcgcg	agcaattcgc	atggccgcat	1380
ccggacgggt	aaattcgatg	gctacatcgg	ccgaacgaaa	cctatcgaat	cgaaacgatc	1440
ttcctctccg	gcatcgatcg	tcagcaccac	tcatgccctc	ggctgcatgc	aatccgttcg	1500
atcacatgtc	ccatcttgca	taccctatca	gtactatttt	cataggattt	tcttcttgga	1560
aaaacgaacg	tacccggccg	caagggccaa	aggtacacag	atttagcgca	agttcatccc	1620
gtgatcttgc	ggtacagatc	cagcgcgtat	atatcggtca	tgccggtata	tagtccagcg	1680
tgcactgtat	cttaccgtag	aggctctcct	cccgttgttg	tactgcgtac	ttacccgact	1740
gagcagcgtc	cggctatagg	catgtccgga	ttggtgaggg	cctgcatcat	cttatctatc	1800
agcgcaccga	atactgatgt	ccggcaagct	ccacatccac	cacgt		1845

```
(2) INFORMATION FOR SEQ ID NO:16

     (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 1193 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO
```

(iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...1193

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:16

```
aaggcaacgt ggttgactgt atcgaatgcg gttcgtgcag cttcacctgc cggccaaccg      60
tcctctgctg gattatatcc gccaagccaa gaagactgga tgggtatcca aagagcacgt     120
aagcaataag aaaggaaata agcgatgaaa ataaaattat catttctcct tcaccgcaca     180
tccacagcgg agacagatca aaaagaatat gtatggtgtg ctgattgccc tcttgcctgc     240
cttggcatgt cggtatatca gtttggaatc ggtgcggtga tcgtaacggc agtancggtc     300
ttaactggtn gcatcgngga atacctgatc agcaaatata tgtgggcaag gagcctacca     360
tcatggacgg ctcagctatc ttgaccggcg tatgctggct ttcaacctgc cgagcaacct     420
gcccgtttgg atcattatca tggtgcagta gtagctatcg cattgggcaa gatgtccttc     480
ggcggcttgg gaacaacatc ttcaaccccg ctttggtcng tcgtgtattc ctcctgatcc     540
tttccctgcc cagatgactc tctggcctac cgaaggacag atgacttcta tctggatgcc     600
gagaccggtg ctacgcctct cggcctgatg aaagcagaat gagcggcgac acctcggctt     660
tggctaatat ccccacagac ctgcactgtt tatcggtgaa gcaggttctt tgggtgaagt     720
cagtgctatc gcattcttct cggattggtc tatatgctgt acaagaagat tatcacgtgg     780
cataccccgt gtctatcttc gcatctgtga tcgtactggc aggtattctg cactggccag     840
ccccacatcc ttcccggcca ctccgtggtt ccacctgttc tcggcggtat gatgctcgga     900
gccatcttca tggccacgga ctatgtgact tgccgatgac caagtccgga cagatccttt     960
acggctgtct gatcggtttg tgaccgtcgt gatccgtaca ttcggggctt atccggaagg    1020
aatgtcattg ccatcctaat tatgaacggt atgacacctc tgatcaacac ttatatgaac    1080
ctaaacattt tggaggaaag aacaaatgaa aaagctaaaa tcttcacccc caatatgttg    1140
ctctctttga cgggcttctg tatcgttgtt tctgctctct tggcatgatg gac           1193
```


    (2) INFORMATION FOR SEQ ID NO:17

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 756 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...756

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:17

```
ggttgtccgt aaacgtggaa ccgtgtctgg cacgtgtatt ggtcgtagga aaccgacaat      60
atcgggcgga gagtacacag gcgatgtttc ctgctatgca ttgatgtagt accacaaagg     120
atataccct tgcgccattt ggccaaatct ccagtggcac taatgaagcc tatggagaca      180
attcgcctct tgctgacgtt atgcctcaag ttgggcagag gaatcgatag ccgccggtgt     240
agcatcaaca acgtctatgg gtatgtcaag gcagacatgt ttgacaatcc tgtgcagcaa     300
```

```
ccaagatgca ggagaaaaag acggacttca atctgaacca agtgcgatct atacaaaaga    360
atcgaccgta aatcctaaaa actactttac ggttatgtgc cgagagtagt cttgcgtgca    420
aaatacgttc ctcatggcat cccggcgtga agccggatga aggctggatc gaatttcagg    480
gtagaaagat agtctggagc agttcaaaaa atacgtagac aatccggttt ctgccggtag    540
gctctggccg acagcatcaa gaaggcgaaa gctgacaatt cattggtcat acaggtggat    600
tcgtcagtca tggaatacag ttctattaca aatcgcaaat tattatgcca tccctattcg    660
ccatttcgat gatgaaaaag ctcctacaaa gattcctacg ggcgtttcgg cctcgtacga    720
aacaatgagt atatctctcg gtaaagtcca ttacag                              756
```

(2) INFORMATION FOR SEQ ID NO:18

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 549 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...549

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:18

```
acgaactgaa aagcgttttg ctgaaagacc tctatgacaa tggcgagaaa tcattcgaaa     60
ccagcagngg cagatcgatt cgctccgaaa tgtattaact tctacaaccg tttctcttcg    120
atggagagtg agatagccca agagctgaag tgattttccc ctctatcaat tcggctatgc    180
tggtaccttc gtccgggtgg cacagggtag ggattccgtt ttgctcgtcg tggtgcgtcc    240
gaaagccgga taagccagtc ggaaataaac aagctaagca catggatggc tacggtacca    300
agaccaagaa agtgcgcctt atcatagaca ataatcatag gtacaaccat aaacagtaat    360
gcaaatgaaa ttaaaaagta ttcttctcgg agagccctgc tgttgggtgc ttaaggggta    420
gccaaagccg acaaaggcat gggctcctca acgaactcaa tcaggagaat ctggatcgaa    480
tgcgtgagct ggctttacct cccgtggatt cgctctacag tttcgacaag ccgtccatgc    540
atgcccgtg                                                           549
```

(2) INFORMATION FOR SEQ ID NO:19

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 300 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
                (A) NAME/KEY: misc_feature
                (B) LOCATION 1...300

          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:19

gagttctgct tttttagctg aatccaaata cattttcttc cgttttttac gtgttaaaca   60
ataactactt ccgctactac ggtcgtagat ctggccgcaa gataatataa ttccctatac   120
cacagcgcga atctgtttct tcgctctgtt ataacgatgc cgttggacgt acggatctac   180
attgggccaa gcattcagga aaggtgaact cgcccttctt tgcatttttg ggtccaaaaa   240
caagcaagaa agccgagatt ctatttactt ttgtgcactc tttgaacgaa aatncgctta   300

(2) INFORMATION FOR SEQ ID NO:20

          (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 746 base pairs
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: double
                (D) TOPOLOGY: circular

         (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

         (iv) ANTI-SENSE: UNKNOWN

          (vi) ORIGINAL SOURCE:
                (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

          (ix) FEATURE:
                (A) NAME/KEY: misc_feature
                (B) LOCATION 1...746

          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:20

gaagcaaaat ttgtcactgc angcatgtaa cagtattttc tgcaaccgaa tcaccgtctg   60
caaacttgaa tcaaagagat actaatcata agcaattatt tctcaataaa ataatcatta   120
cttccatatt tagtcatagc tatcatggta cttatttcaa attcctcagc cgcaacaaac   180
tctacacctt cgttacatcg taggctttgc cctctcgctc atattcgtct tgctgcttag   240
cttcttgtac ggcgcgaaca gcaagccgat cgtattcata ccgattacaa acgttctatc   300
agtacaatgt cgagagtaag aataactgga gcggatttat ctgtgctatc ctgccggaac   360
gctcattcgc gagcaggtac ccgatgtgga aggatatgcc gcatcagcga atacaacgac   420
aaggaataca tctttatcgg tccgacaagc aaaacgggtt gattgcctcc catctttcgg   480
tcgaatccaa ttctttactt tcttcgacgg ctataaactc cttgagggtg atcccaaaat   540
gtcctttccg agcagaacag tgccgttatt tcctccgcgt tggcagccgt atcttcggta   600
acgtgtctcc catcgggcag gagatttcgt ttttcgattt tccaaaaaca agcagacctt   660
tcggatcacg ggcatcatgg agccgagccg gataactgcc atatcagacc ggccgaactc   720
cttttctatc aggagccaaa gaaaac   746

(2) INFORMATION FOR SEQ ID NO:21

          (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 1804 base pairs
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: double
                (D) TOPOLOGY: circular

         (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
     (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
     (A) NAME/KEY: misc_feature
     (B) LOCATION 1...1804

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21

```
gcctcaatan agcgatcgga ctcttcctcg caggtgtggc agccgtgatg ttcccctgtt    60
cgatacattc aacctcccac cctcgctccg ccctctcgca tccctatta ttgggtacag    120
gtgggaggcc tcttcctcgt cacggtatca atgccttcaa gcaattctat gacggcatga    180
gcgatacgcg caccccatgt atattaccat atcgggcaat ctcttcaatg tcgggctgaa    240
ctaccgctga tattcggcaa aggcggtctc cccgaaatgg gactcctcgg tgcggctatg    300
ccaccctgtt gagccgcctg ctgatgctcg tcaccatcgt cctttcctct atcgcagacc    360
ctcatggaca gcgatccgcc acgccttctg ccgcagatgc atatccgtcg cgcctaccgc    420
cgcctattct ccgtcggact cccgttgccg tccagatggg actcgaatcg gcctctttca    480
ccatcgccgt ctttttgtcg ggcgactcgg cgatcaggct ctggcagcac accagatcgc    540
tgcgtcatca ccacgctcgg ctacctcgtc tattacgggc ttggtgctcc accaccatcc    600
gcatcagtca cttcaagctg cacggcaaac ccgacgagtc cgccgcgtag ccgccactgc    660
ctaccgaatg gccgctttga ctgcctcgtt gtggttgtac tgctttgct cacacggcac    720
agcttttcct tcctctcacg cccgacgaag aggtggcgca catcgttgcc cttacgttga    780
tcccgttgtc gtctaccaat tcggagatgc cctccaagcc atctattcca atgtctgcga    840
ggaatggagc gcgttcgttt tctggctccg gcagcagctt tcgccacgta ttgctggcac    900
cgatactctc ctatttgctg ggattcgtat tatatcgggc aatacgccca tgcagttggc    960
cggtatctgg tcggcctttc catcagcctg acactgctcg gcatcctctt ctacagctac    1020
ttccggaagt aacccgataa actccgcaga ggaaagccct tgttcgtctt cggggaaca    1080
atccttttc cggtcgcccc tctccatttg ctccatggcg gctgtatgaa agtgaaaacc    1140
acagacgaag ccgaccgata ttgccatccc tttgcttctc ctctgtcgat aaagtgaaat    1200
tcatttcctg aaaaaaacat gataatacgg agagaatagt atagtcttat ataagaggat    1260
actatggtct catagagagg atactatggt ctcatatgag aggatactat ggtctcatac    1320
gagggatact atggtctcac atgagaggat actatggtct catacgagag gaactatggt    1380
ctcatatgag aggatactat ggtctcatac gagggatac ttggtctcat atgagaggat    1440
actatggtct catatgagag gatactatcc ctctatatag accccttagg gatgtactcg    1500
aagataccc ttgaaacata aaaaggctcc tccgggaagt ggcaagccac ctgcccgaag    1560
gagccttgag gaataagagg aataaggcag ccggaggcta ctattcgttg cggaagagat    1620
tgatccgtct atgcaatcga tgaggacggg acgtgtactg tccacctatc ggccaagagt    1680
gccttgctca agctcgttga ggacgaatcg ctgcagactc gcttcacagg acgcgctccg    1740
aactgcggat catatccctc gcgaccggca aaggtcaccg acagcctccg tattagtgga    1800
gcac                                                                1804
```

(2) INFORMATION FOR SEQ ID NO:22

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 999 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

```
(ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...999

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:22

aggtgtggaa gtcgcaggat ctgaatatct ttcagattat ccagcgcaaa gcaagggact      60
ggttgtatgt atcaacaagt gggacttggt ggaagataaa gtcaagccgt catcaagacg     120
tttgagaatg ccatccggca gcgttttctc catttacgga tttccctctt ctcttcatat     180
cggctatgac caaacaagga ttttcaaagt gttggagacg gtcaatcagg tctatgcaca     240
ccgctgactc gtattcccac acacaagctg aatgaagtga tgctacccat tatcaggcta     300
cgccaccacc tgctaccaaa ggtaaataca tcaagataaa atagtgatgc agcttccgac     360
ggcagtgcct tcatttgcct tttttgccaa tcgcctcagt gggtgaaaga gccttataag     420
cgttttttgg agaatcagat tgtgcccact gggatttttg cggtactccc atcaacattt     480
ttatccgcga aagtagggtt tgcccctgct caatacgttt aagtcatcat agaagaataa     540
atgatatgga atggaaacgt tttagatttc tgaacaatgt cgtcggttgg gcgtttttgc     600
agttgcagct atcgtctatc tgatgacaat cgagcctcag ccagcctgtg ggactgtgcc     660
gagttcatag tctgcgtaaa caagttgaga tcggtcatcc gcccggagca cccttcttca     720
tgctcgtcta taatacatat cgcatttcac gagcgatccg tcacaggtgg catggcttgc     780
caatctacca gtgcactggc cagtgccttt accatcctgt ttttgttttg gacattaccc     840
accttgtccg ccgcgtactt gtaccgacag tacgcaatgt atcggattgg aagagccgtc     900
aaggaaaata tcctttccac gagtaatcac gtactcggca gtggagtcgt tggagccttg     960
gtctatacgt tcagcgatac ttctggttca gtgccgtcg                            999


(2) INFORMATION FOR SEQ ID NO:23

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1132 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1132

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:23

gctcatgcac caaacaatac aactcttcac tctgcttcgg cgtaagcgac ccatatcgaa      60
ccacaactcg ctgacagggc cgtagcccgt gaggatcttc tgacctgacg catattgtat     120
tggtgatgtg ccggagtaat ccgatcacat tgtgatcgct gatcggattg cttccggga     180
aatgccaatc aataaggaga agtaaacgcc gaacttcata cccgaacgct cacaagcatc     240
gctcattcct tcatcacatc gcgacgcgaa ggagtggcct ccactatatt gaatgagtct     300
cagccgagcc atacatgcag aagccatcgt gatgcttgga agtaacacga tactcttcat     360
ccctgctttc cgagctaagg ctactatggc atggcatccc atctgtcggg cggaaccgc     420
ttggccaccg gctcgtattg ctcatgtcgc gtattccgaa agagtagatc tgttcgctat     480
atccgttctt actggtttgc cttgccaaac ccctccaagc tcactgtaga agccgtaata     540
atgaaaaggc tgaatttgtc acgatgccaa cgctcgaagc ttccgaattc gttgagccac     600
gaggaataga gacgagaaac aaacggctgc cagtgacgca ggatacggag gaaacgggtc     660
ttattcatca tttattttgc agcagggtgg cctcttcttt gcctttgaga tagcggtaga     720
tagcagcttg tgctccaccg gtttctcatc gctattgtgt ttgtaaatgt tgttgagaga     780
```

```
agaacgatcc  ggcaagcctt  gatattgtcg  cgaagctgga  tctccaatat  gtcataatct      840
ctcttcgtaa  agcaggatcc  agcacagggc  aggcagtctc  gagcggttgt  atagattgcg      900
cttcatccag  tcggccgaag  agatgaatac  ccttctttcc  ccccgttgtg  gaagcaccag      960
atacggctat  gctccaaata  atatccacca  atcgagtgac  acgtatattg  cgactctgtg     1020
gcatatcggt  accaaacagc  agataccttc  gcacgatcag  atcgatctnc  acaccggctc     1080
ggaagcccga  tagagctgtg  tgatgaccat  tctttgtcct  gcaagccgtt  ca             1132
```

(2) INFORMATION FOR SEQ ID NO:24

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 665 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...665

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:24

```
attacaagga  aacctcttga  tcgtaagcgg  atcggcagac  gacaatgtta  tcttcagaac       60
acgatgcttt  ttacagaggc  actggttcag  gccaatatcc  cttcgacatg  gctatctata      120
tggacaagaa  ccatagtata  taccggggga  atacccgcta  tcatctctat  actcgcaaag      180
caaagttttt  gttcgcatct  tttantacag  nttttctcag  ttgcttgatg  gggcgagtgg      240
cgaaggggtt  tttgttcact  tgctccgttc  gacagtggtc  tctaatagct  ctttttgaaa      300
aaactatggc  gcaacacgtc  aagaaacccg  aatggttgaa  aatcgtcttg  gtgggaatga      360
gaagtttacc  gagactaaaa  gcattgtcga  ggacattgtc  tgcatacgat  ctgtacaagt      420
ggcaaatgcc  ccaatatggg  aagtgctgga  gtagggggac  tgctaccttc  atgatcggtg      480
gtgatatctg  acacgtgcct  gtcgattttg  caacactttg  acggggcgtc  ccaaaccgcc      540
aatgaagcag  aacctactca  cgtcgcattg  agtatcaaac  tgatgggggtt aaccatgctg      600
tggtgacgag  cgttgaccgc  gatgacttgc  ccgattaggt  gccgcacact  gggttaagac      660
cattc                                                                       665
```

(2) INFORMATION FOR SEQ ID NO:25

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2330 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
               (A) NAME/KEY: misc_feature
               (B) LOCATION 1...2330

          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:25

```
tttttgaatg tctgccggac tgagatttga tcgtaatgct cttttgggaa ggtgatattc      60
agacagtcgt atgtggagcg aatcctatcc agactctccg gactgctgca tcggggagtc     120
ctaccatact tgagatagca acctcggtga tattgacttc gacggtaacg gtaagggcgt     180
ctatgctgtg cagagcgcgg caaaggtctt tactaacata ataaagaaac agggtgcgaa     240
aggacatcgg agactgtagc ttgcacggcg gctacggata tttccggctg tgtcatgtgg     300
atagtatatg gaaggctgtc tatgccatat cgctcgagaa gtgcgatacc tgtccgatac     360
tatccgatgc cacacgtccg ggcaaagcca actcctgatg agtttacgga gagatgagtc     420
cggtgcaaag agcgagagag tagggtttcc ggctttgtct ttccttcttt atctctccat     480
actttcaatg tgtagcggta gtggagtcag gcttgttcgt gaagagcaaa agcacatctg     540
tcccctatac caggaaagag tgaaagatcg ctgatcaata tccttgacag gaagtccgga     600
gccaaacggc cgactgcgta cgacttattc cggctaagat ggaatcaaga gacgggggaa     660
gccggtgcat cgagataccg gagcgggaat gaggtctatg tcgaaaaggt cgtattcctc     720
cgctaatctg tttatccggt ggcatcggga tgggaaagat agaagtcaag ggctttgagc     780
cgcagtctct gaaggctttt gctttggagg ggaagtcggt ggttcggaga tgacctgata     840
gcgatggatc tcttcttctg cagtttgcat gaactcgttc aggtggcatg tgtacttcct     900
cctttatttt taggcaggag gggttggtcg gatcgagagt gattttaata tcttctccct     960
tttcaggata gagccgaagc cgttattgcc ctcgttgaaa tataatagaa tgcgactaac    1020
atcgccttta tttcgtgtcg aatctgtgcc ttgggcgaag taacgtgtat ctcttctggc    1080
gaaaggagcc ttccccttca attcgcagag ccagaaccga atcgcctggc tgagattgga    1140
gagattcagt ttgaggtggc aaacatcaga tgctctctgc atgaaagaga aaggagcagg    1200
acaaaacctg ctactatata atatatatgt tggatggctt ggacattggg acggagtgtt    1260
tcatgattcc gtagaagtcg gagcaggtat tcctctacag tttccggata gtgtgcatat    1320
tccaagcgtg gattctttgg gccagcgtat ccggagtatc ttccggaagg acggacagac    1380
tgcttgacgg aggattttgc cgtggtcata atgtccatcg aaagatgaat ggtgataccg    1440
ctttcttttt cccttgcagc aaggacggct cgtgtacgtg atgtccgtac attccttttc    1500
cgccgaactt gggcaataag caggatggat attgacgatc ctgtcgggga aggattccaa    1560
gtagggtggg ttatataaca catatagccg gccagcacga tcaggtctat ccctaatctt    1620
tcaagagggc aatgggcttc gatccttcga gcatctcttg ggtagtaacg aataagccgg    1680
tattttcagc cgatgggcac gtgccataac tcctgatcgg agtgattgct gaggatcaca    1740
gccaagcttg ccgaacctct ttggcaaaga aatgacacag attttctgca tttgagccat    1800
taccggaagc taaaccgcta cttttctcat tttatttact atttttgctg cacacaaaga    1860
gttgattgtg cagattttct ggcgctgata atggactaac acggtatttt cgtgctaaat    1920
ccgctaaaca gcgctaaatg aagcacaaat ataagtaaga gattattagt aataaccatt    1980
ttaaagaaca agactatgtc tgaagtagaa aaaaagtgat cgacctcgta gttgacaaat    2040
tgaatgtaga agcttctgag taacgcgtga agccagtttc tcaaatgacc ctcggagcca    2100
gactctctga tacagttgag ttgatgatga atttcgaaaa ggaattcaac atgtcttccc    2160
tgacgaccaa gcacaggaga tcaagactgt cggcgacgct atcgatatat cgaaaaaaac    2220
ctgaagtaaa atactccgat ggaactgaaa agagagtagt aacagggtta ggagccatta    2280
ctccgcttgg caactctgct cccaaacgtg ggaaagctta gtggcaggca                2330
```

     (2) INFORMATION FOR SEQ ID NO:26

          (i) SEQUENCE CHARACTERISTICS:
               (A) LENGTH: 557 base pairs
               (B) TYPE: nucleic acid
               (C) STRANDEDNESS: double
               (D) TOPOLOGY: circular

         (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

         (iv) ANTI-SENSE: UNKNOWN

         (vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...557

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26

```
ggggacacgc atcagtctgc atagctcggc agagaaggtt tcacgcgtcg gcgaatgccc    60
agcgatccgt ccgaagcgat gagtgccggc gccacgcctt ggcctgagga tagatgatgg   120
tcagcggttt ggtcgtcagc tcgatcaatc ccaggccaac tccggcactt cgtccatgag   180
gccttggagc ttcgctccga atcgatgaag gaccaagcat gctctngctg tccgctcttt   240
ctttcgccgg taaatccgct ggacggcttc ttcgttcgtg gcatcgcagc ctatccccaa   300
atggtatctg tcgggtaaag gatgattccg cctttgcgca tgattcggcg gctttcttcg   360
cttcacttct ctgaatatcg ttgagcatat cgtgggtata tctctatttt ttcgagagag   420
ccgagtgcgc tcactccttc agggcaaaag tatgaatatc tgccgtatca atgctttaat   480
atgtcatttc tagtcttcat cggttatttc tgtctgtttc tttattttat aaatgatcat   540
tccggccgga gaaagtt                                                   557
```

(2) INFORMATION FOR SEQ ID NO:27

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 672 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...672

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:27

```
ggctgcaagt atcgcgtccg gatcagtgca caacggtatg gtttcattcc atcgaatgct    60
gttgttttac ccggtcatca gggagacgat ttgggtggtc acagctgatg tattcccgtt   120
tggcagaaag caaactttcg cccaacggct gtcgcgtatc ctctactccc acaagcagat   180
gaatcagcag ttcgacggaa gcaaaaggaa cgattactat ccatacaggc aaagctgttt   240
tcctctacga caaggaacaa caacctgctt atcgcacttt cgagcagtat atgcgtggga   300
aaacatccct aagtatatgc tcaacagcca gcaatcatgg cgatcttcgg attagatacg   360
gtttgtatgc ttctcgataa ggaattgctt gatttgccta ctctcttccc ttcgaatacc   420
gctacggaaa gcgtatctat gtgatatttg tcgtgaactg tatggcgaga aaggcatttc   480
ttttcggac atttgaacct gcatggcatt atctcttctc ctgtttaccg actcaaacgt   540
ctctaaagcc tttgcttcga ccatttatac cccgtccttc gatttggaag gcgatattat   600
cggttttgga acggatcatg caacctgtat taccgacggt agagcaagga cgacgtttcc   660
acccgacatc ta                                                       672
```

(2) INFORMATION FOR SEQ ID NO:28

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2497 base pairs
        (B) TYPE: nucleic acid

```
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...2497

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:28
```

```
gcctatctct gtgatgacaa agtcggtact gactcttttg tcccaggagt tgacgttgcg      60
cttgatctca tccgtaatat gaggcaccac ttgcacggct tgcccaagta ctcgcccttg     120
cgttccttgc ggattacgtt ctgatagtcc tgcctgtcgt gatattattg gcacgagtag     180
tgggcgtatt gaggaacgct catagtggcc gagatccaaa tcggcctcat gtccgtcctc     240
ggtgaatagc attcgccgtg ctcataagga ttgagcgtac cgggatcgat attgtatagg     300
ggtcgaactt ctgaagagct acgttgaaac cgcgagcttg gagagtttgc cgagagatgc     360
tgctacgatg ccttttccaa gagaagaaac caaccaccgg tcacgaagat atacttagta     420
tctgccatag cgcgaaaaga tgtattgttg atactttgat cgataaatca ggggtacgga     480
aagctacccc aacggaccag cctcctccga ttcgtgcgca aatatacaaa aagaacgccg     540
ctaaaagagg caaatacgac agctcttgcc cgatgccggc acatcaaatg agaaatgagg     600
catccgacga accgcgataa ggctatccga ggcaaattac gcgccggaaa tgctccgatt     660
gcggttcgta aattctcgaa aacacggcga gattttttcc gttttggttc gggaaacaaa     720
aaatttacgc gccaagcgaa aatttтctcg cgccacgttt ttacgaacga caatggagcc     780
gatttggaac cgagacggca atatgagcag catgccccac gagtcgtttt ttctctcgca     840
ggataaggta tttccttagc tggataagaa ggaaatgaca ccaccgattc atagcaaaaa     900
gcatggtttt cattccgaca acaaggtgtc aatgatgagg gcaaactcga tcgtaatgct     960
gccggcacgt tgttcgaatc gcacctgcga tcaaagattg gctgtttggg aaaaagcata    1020
taaatttgga ggaaatttca gagtttcact cctaatacta catcagaaca tggctgtctc    1080
atcaatgaag tttccaggac gttcggcgaa tatcttctta ttcccggctc actacagaac    1140
agtgcactcc ccaaaacatc tctcttcaga ctcctccatt aagttcaatc gcgatgagag    1200
tccccgtatc aagctgaata tcccgttgtt tcggccatca tgcagtcggt ctccaatgat    1260
acgctggcca tcgattggca cgcaacgggg gactttcgtt tatcttcgga tcgcagagca    1320
taggagtcag gccgaaatgg ttcgtcgtgt aaagaaattc aaggccggat tttcaccagc    1380
gattccaatc tcagaccgga caatacgctg gccgatgtat tgatctggtc aaaaggacag    1440
gacataataa tataggtatc actcacgacg ttcgtccaat ggccgtctga tgggtatcgt    1500
cacgagcaga gactatcgct cagcacggac tcaccctcga agccggtcaa agattttatg    1560
acgccgttga gagacttacg gtgggcaagg tcggtattac gctgagcgaa gccaacgtat    1620
tatttgggaa aacaaactca atacgctgcc gatcatcgac gaaaatagaa tctgcagtat    1680
ttcgtcttcc gtaaagatta cgacagccac aagaaaatcc gctcgaactc tccaactaca    1740
cggacaagac cctcctcgtg ggtgcggtat caatacacgc gactataagg agcgagtacc    1800
tgcactggtg gagccggtgt ggatgtggtg tgcatcgact catcggacgg ctattccgac    1860
tgcagagcaa tacgatccgt tggatcaagg agaaatacgg ggacagtttg ccgtaggtgc    1920
agggaatgtg gtcgatcgcg atgggttcaa cttcttgacc aggccggtgc ggacttcatc    1980
aaagtaggga tcggaggagg ctccatctga tcacacgtga gcagaaaggg atcggtcgcg    2040
gtcaggcaac ggctgtaaag acgtagccaa ggcacgtgac gactattacc gacgaacggg    2100
cacttacttc ccatctgtag cgatggaggg ctcgtacatg actaccacat ggtgctgcat    2160
tggccatggg tgccgatttc ctgatgatgg gacgctattt cgctcattcg acgagtcgcc    2220
gaccaagaag atgaagatag gcagcaatat cgtcaagaat actggggcga aggatcgaac    2280
cgcgctcaga actggcaacg ctagacagcg gcggcaccga gacgctcaag ttcgaagaag    2340
gagtggacag ctcgttccat acgccggtaa gatgaaggac aacctgctca tcacactcgg    2400
cagatcaagg ctacgatgtg cagttgcggt gtcattacca ttcccgagct caagagaaag    2460
ccaagattac cctcgtgagc agcaccagta tcgtcga                              2497
```

(2) INFORMATION FOR SEQ ID NO:29

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 630 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...630

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:29

```
cgaggtagcc ctgctttgtc tgtccactca ttcatatcat tgagggaagt ccatcgaaga      60
taggtgtagc aaatttgaca ttcatcttgc gtcccgccag gcaagtaccg cttcgaatat     120
ctgtcccagg ttcatacggg agggtaccca agagggttta ggcatatgtc taccggagta     180
ccgtctgcga ggaacgcata tcctcttgac gcacgatttt ggacacaata cctttatttc     240
catgagtccg gccatcttgt cgccaacttg gatcttccgt ttcttggcta tataactttg     300
gccatttgaa caataccggc aggcagttcg tccccgatgg tctatctaat ttgcgacgcc     360
gtagttcagc ttcaatctcc ttggagtgct tcgataattc accgcaacag ccttaatcaa     420
ctcgttcgta tgtgcatcat tgtccaatca cttaattgga tcacattgaa atcaagagct     480
tcaagatctt tttggcgaat ttgctgccgg ccttaatcaa ctcaacattc aagtagtcct     540
tacgccacag caggttttgc ctttggtcaa gttctggtag cttgtcgaca gacgcttcat     600
gaagtggtgc tgccttttcg cgtatgtttc                                     630
```


(2) INFORMATION FOR SEQ ID NO:30

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1322 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1322

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:30

```
gcaaactctg aatgatccgt ccgcacatag caccgatgta ggtacgtcgt gtccacgaat      60
ctcagcttcg tcatgcaagc cccctaaaga aatgcgtagt atttacgacc caagctctcg     120
gcaatgctct tgccaagaga ggtcttacca ctcccggagg gccgtacaga cagatgatgg    ·180
```

```
gcgacttcat atcgccttca tcttgaggac agccagatgc tctatgattc tctctttac      240
tttctaagac cgaaatgatc tctatccaaa acggattggg cacgcttcag gttgaattat      300
ctttactgaa tacgccccac ggcagactga tgatggtctg tactactgca tctgtacgga      360
gtagtcgggc gattgaggat gtagccgttc cacttgcgga gttctttttc gaaagtttct      420
gctacctcgc tgctccactt ctcgtagcag ctttggtacg cagctcctgc acctcgatgt      480
cgtttatatt ccacccagtt cctcctgaat cgtcttgatt tgctgctgca ggaagtactt      540
ttctgctgct tgtccatctc ctcgcgcgtc ttcatctgaa tagaagcttc agttccatta      600
cctgaagctc cttgtgcaac aggtagagaa gacgatacca cgatccttca tcttgctgat      660
ttccagcaat tcttgcttga cggctagctc gtggatatat tggccgatgc aaagttgatc      720
tgatacatcg gattctgttc cgtctcatcg agaggataag ctcccgaggg ggtctctcga      780
ccatagctcc atcatcttca gactcatatc ctgtatggtg gagacgagtg cttgaactcg      840
tgatctttgt tcttcccggg gagaatgtct gggagcagct tccgcgaccc ttcataaaag      900
gttccgtagc cgttatctcc tgcagtgcaa acgctggcgg ccttgtacga tagccgtggt      960
agtaccatcg ggcatctcca caccctgatg atttcagcca cgaccccgac atcatacaaa     1020
tcggcacgac cggttcctcc acatccatat cgcgctgtga aacggcaccg aaatagaccc     1080
cttcttctcc acgtagcgga tcagcttgag tgattttct cgtccgacat gataggcatg      1140
gccacaccgg ggaagagaat catattgcgg agagccaaat cggcatctcc tcctgcatat     1200
gatcttcttt cacctgaaat cctcacttct tcacaaacgg aaagcaccgg aaagaatacg     1260
gggaaccatc atcccgtcgt cctctccagg cgtatatatt tctatcatca tctttagtct     1320
tc                                                                     1322
```

(2) INFORMATION FOR SEQ ID NO:31

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 454 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...454

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:31

```
catccccggc aatcccagcc acatatacca gaacataggg gctacaactc atcgctcaga       60
ttctccgaca aagtctccaa agctgccgtc ctgacttctg cgccgacaga gcagccgtat      120
cgcgccctac gattcgcgtc acctgttgcg cccttcttca agcgaacgat cgactgcttc      180
gaataccata cgtactcacg aataagggta gtacctgcca aacagaagaa aatggccgat      240
agccaaataa gagaagccac agcaaatgca acagcaatcc ggaaaaaatc gtccgcaaaa      300
tggtataaac acagacaaaa acaagtccca agaggatcaa taggtcaaaa gaaaaacggc      360
aacgatatag aacaccgaca tgaaggcgcc ttcacctgcg gtagtttcct ttattcaatc      420
tttctctccg atgcaatcat ggaccgaagc cgac                                  454
```

(2) INFORMATION FOR SEQ ID NO:32

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1317 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular
```

(ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1317

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:32

```
tcactctcca cttcgagcat attgcccgcg aagtgctcca cctgctccga ctaatggcta      60
tgatgcggtg tccgttagcg gtcaggctat tcaccaccta ctgcgctcgg cttcgtccct     120
gatgcactcc aaacaaacga tcgcatacgc gaagccacac acatcatcac attggtatga     180
tagatgggag caccatcgca tctgtggcgg taaaaatcaa tcctttgtag tccaattccc     240
gacaaattcc tctaatacct tcggattggt acgttcggaa gagcagcagt aagcatacga     300
ttgaccctgt ccaataccat actgcccgtg ccttcgagaa aacattgtcc cgctcgtagc     360
cggagagatt gatgatacga tccacccctt cctttcacca acagtagcca gtacgggcaa     420
tttccgctct tgctgcctgt tggtgcatac atgggataaa gcaccaattc gcctgtgaca     480
tgcgtgctga ccaattgttc gggaatatcg aatccggtgt atgaggtgtc ttcgaatccg     540
aatgacccat acatctaccc cgtattcgcg caatagattg acgtagtttc aaactctttt     600
ttcgcttccc ttgctactgc ttcgggtact cccgtttttt ctggaagctg ttgtttctgg     660
ccgtttcggc attaaatcca aaaagaccgg gcgcaccatc agcacccggt tcgtggcctg     720
cttgcgaata agagcatgaa tggttactct aaaaccttga tggattcctt gataatctcc     780
acggttgcgc cagctcctca cgtgtgatac aaagtggcgg agccaagcga atgtatggcg     840
atgcgtcggt ttggccagaa ggccgcgttc ggccattgcc tccacacgtc ccatgcctcg     900
tgtctattgt gcggttcgat gacaatagca tgagcatacc tcgtccgcgg accaacttca     960
atagagggct cttgattttg gcaactctcc tctgaaatac tgccccagct cctcggctct    1020
ctccggcaac gttcttcttt taccaccgta agggcagcca tcgccacttt gcaggcaagg    1080
ggaatccccc gaaagtggaa ccatgctcgc ccggcttgat cgtaagctaa cctcatcgtc    1140
tgccaatacg caacttaccg gcaatacccc gccggaatag ctttaccgag cacaacaata    1200
tcgggacgaa cgtcatcatg atcgcgcaga gcatccgtcc cgttcgtgcg ataccggtct    1260
gcacttcatc agcccaaaga gggcatggta cttgcggcaa agctctgcag cacgacg       1317
```


(2) INFORMATION FOR SEQ ID NO:33

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 895 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...895

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:33"

```
ggaaaacagt cggctgtacg cttccacctc cgccacgtcc gcacacaggg gatctgatcg   60
gaaggatgac gggcaaactg atgatgaagc cggaagagtt tcttccctgt tggccgactc  120
cgctttctgc gattcgctgg gattcgacca cactccatcc gcagcctttt tctgcccgaa  180
acatacgaag tggattggac attaggccaa aggacttggt tctgaggctg aaagagatac  240
tacgacgcta ttggacagca gagcgacgga gtctggccga ctcattgggg ctgagccgat  300
ccaagtatcc attatcgcat ccatcgtgga ggaggagtcg ggaaatccga tgaatacccg  360
cagatagccg gtctctatat ccgtcgcttg cggaggggat gctcttgcag gccgatccga  420
cggtgaagtt tgcgatggga gcttttccat ccgtaggatc ctgaatgtcc atttgcagac  480
ggattccccg acaacactta taaaaacgaa ggactgcctc cgggcccgat ccggctaccc  540
ataccgcgac catggacagc gtgctccgag cggatcggca tggctaccgt atatgtgtgc  600
caaggaggac ttctccggcc gtcaccgttt tgcccaccct atgccgaaca ccaacgcaat  660
gcggctctct atcgcaaagc actcaagaaa ggggggatcaa atgaccgaag aaacggaaaa  720
gcccctcatg gacggagttg ggatgagagg acggagctgc tcataggcac ggaagcagcc  780
gacagctccg gcactcgcat atactgatcg tcggcaccgg cggagtaggc ggcatgcagc  840
agagatgctc tgcgtgcaga gtgggcagac tgactttggt ggtgccgatg tagtg       895
```

(2) INFORMATION FOR SEQ ID NO:34

     (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 685 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...685

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:34

```
gccgtctggt tgaaaagggc aagatgtctg ccgatgagca gcaagccgta tggctcgtat   60
ccgtacgacg atggacttca atgacctgaa agatgccgta tcgtgattga agcgattgcc  120
gaagaaatgg aaataaagaa acaggcctca gtgctgtggc ggaagtggta agcgagcaat  180
gtatcatcgc taccaaacat cttcattgag tatcacagct ttggcaaccc gaactcccta  240
ccccactcgt gtgatcggaa tgcacttctt caatcccgtt cccgtgatga aactgtagaa  300
gttatcagtg cccagcaaac ttcggacgaa gtgatgaagc aggactggac ttgtgcgaaa  360
tgctcaagaa aacagccgta cgcgtgaacg aactcccggt ttcgtcgtaa accgtcttct  420
cataccgatg atcaacgaag gatcggagcc tatgcccgac ggtgtggcca gcatagagga  480
aatagatcag ccatgatgct cggtgccaat cacccgatgg gccctttggc tttgggcgat  540
ttatcggttt ggatgtctgt ctggctatca tggaggtatt attcaccgat tggtgatgcc  600
aaatatcgtc ctcatccttt gcttcgcaag atggtcggca ggacagcttg gccgaagacc  660
ggcaaagctt ctacgactat agcaa                                        685
```

(2) INFORMATION FOR SEQ ID NO:35

     (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 1591 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
      (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
      (A) NAME/KEY: misc_feature
      (B) LOCATION 1...1591

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35

```
taagattcct ccgatgatat tacccttgtg ccctacagcc gtagcttggc gaaatgaggt      60
atctcattgt aggggatgac ggtcttgttt tcgatttttc ggccagttcg cctaagccgc     120
tacccagtat tatagccgtt ttggcatgcc cggtagacga gaggacagga aagatgctgc     180
ctcgtggtaa tgctgtcttg gagtttcata tgcggtatgc ttataatttc attcgtgtgt     240
tttgtggcct ttgccatcag tttgtatgca gcttcagctg cgccggccaa tatgcttcct     300
ctccgggtac tttacgtccg cgcatcagga tcttcccatc tacatagtcg tatccactgc     360
actgctattg gcagaataaa ccaagttgga tagaagttgt gacagggagt catttccggg     420
atgtccagac gtatcagaca cgatctgcca agcgtcccgg agctatgaca ccggtatccg     480
tacccatgat cgagctccat ctactgtcgc actttcgtat atgtcggttg ctttcactgt     540
gtagcatccg aacgccaagc tttgccgaga aaggcggcca gcttcatgcg atgatcatat     600
ccaaattgtt ggaagaggag catccatcgg taccaagcct atgactattc cgcgcttgcg     660
catctcgtca tagtggaagc ggtagcggag gctaatttca tattcgacgc ccggattgtg     720
taccacctta cagcctgagc tgccagcaag tccatttcct catcatccag ccagatgcta     780
tgagcaagat tagttgggcg atagtatgcc cagtttgtgc agatacctga cagagtggta     840
ccgaacttag cgatgcagtc ccggacttct ccttctgtct ccataggtgc aagtgtatca     900
gcacattttt ctcattcgcg aagcgatgac aaattgcaat tgctctccgc ttacggtata     960
aatggcatga ggtcctaccg aaattggatc ctgtcgctat aggagcagaa tgcttcgtgc    1020
agactgtaga gcgttctctg tcgatgcgag cccgctcctg atctcctctg tcgaagaggt    1080
ggatgatagt acggcacgca agcccatctc ttctactgct cgtgctgggc aagggtatga    1140
gcgtacatgt cgaggaaagc agtcgtaccg ctcttgtcat ctccagacag gccaatttag    1200
aaccccagta gacatcttcc tctgtatctg tgcttccacc ggccatatcc agttctcaag    1260
ccaatccatc agtccagatc atcgccgtag cctcggaaga tagtcatggc cgaatgagtg    1320
tgaagttttg caacccgggt ataacggcca tggaagaggc atctataatt tctcggcatg    1380
acagccaatc gccggagcaa cctccacaat acggttgccc tgatcctgat atcctgacgg    1440
acaccttcca gcagtgcctg ttttatcaat tgcccaatgc agtattcttt taatgaaaga    1500
gggtgcgaca ggatttcctt tgccctgtat gcaccctcta cggtttcttc ttacttgtat    1560
atgcggtaaa ctcggctacc gattcgattc c                                   1591
```

(2) INFORMATION FOR SEQ ID NO:36

    (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 2239 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
      (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...2239

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:36

```
tcaactatcg tccggattcg tacgttctca ttcctcgcgc tttgtacgag agggtagagc     60
cgactattgg ctgaggactg ccatccacct gccggacgag gcaagggcgt agccgtcatg    120
gagtacaacc tgcctcatca ggataagtgc tgattttggc ttgggacaaa gcctcttcta    180
tgaattncta agaaggcaca gatcggaaca gagttcaccc ccggctttat cccctttttc    240
aaagaacgga gcgacagagc aggcaacata cggccaaaag agttgccctc aatcccggca    300
tgacaaactc gacctcttcg tattcgaagg aggtagtctg ctcttgccaa tacatacagc    360
ttcacggaca atcaaggcgt tcgctccatc gagaggaagt ccttttctat ctggtcaccg    420
tctggaagag cttacggttg gtatagagca tgaccgtatc gttatctgta tccaacaaaa    480
tatccgcgac actctgtcgg aaaagatgat ctcaggcaaa tattggagcc gttcttccgc    540
atatcgaact gtgcaaagag ccggtgtaac gccatattcg aactctctct ccacttcttc    600
ccctatgcgt gtaatcagag gtaaatacgg acacagggtt tcgatgtacc caaaagcttc    660
aatgcccgtc ctacaacgga ttttgcaaag agaacctctt caacatccta tccaaccgtt    720
tcgatttcga aggacttcgg ctatcgacct attctccggc acggggagta tagcattgga    780
attatatctc ggggttgttc ttccgtcact tccatagaaa aacgccgtga gcagcagcct    840
ttattcgcaa cctcattaag catctgaacg aagaaaactg ctgagagtct tcgagacgga    900
tgtatttta tttctggaac gcaacaaagt agccaccgct atgacttagt ctttgccgat    960
ccaccctacg ccttgacaga ctggagcagc taccgaccaa agtattagaa agtaacatac   1020
tggcagaagc gggctttca tcctcgagca ccctaaggat ttcagcttta cagaacatcc   1080
cgattcgagg aacatagagc ctacggttct gtcaatttca ccttcttcgg taaatcttaa   1140
accccaccga caaatatttt tcataaatcg gagctaggga cgttgtaat ccttttggct   1200
acatctaacg tactcgtccc ttgatccatt gcgttacttt tttatgtttg acgtctcatc   1260
ggatgtcgga gccttcgaag ctgaaatctt tgaactgaga agtgaaatac gctgacaaac   1320
agctattgca tgtttttctt cagatcgaat cctcattgtt ttatagccgt tcgaatatac   1380
tccgaagggg ggtcgagcta cgccctacag cgactcgggc tcgccgtaga gcgtaccgag   1440
ctgcgctcta cggctcttcg agctacgctg agggctcgct gcgccgggct ctacggctca   1500
gctcggccac ctctacggcc ccggagcgga actctacggc tcggctcgct acgctgtagg   1560
gcgtacctgc cgagctctac agcgtagctc gaagagccgt acgggatagc tcgtcatctc   1620
tacggagtac cgccatctgc cctgtggtat agcccatctc cctataggac tgcaacattc   1680
ggtcaaaagc aatccgaatt tcaatgttgg ttcgaccagg cagaagcagg attgccccct   1740
atacaattgc ctgaacagaa caactataac ttccaaaata ttagtgcgtt aaccgctaat   1800
cttggaacga ataattggcg ttttcttacg ccgaactgac gttaaatcta taaatcgggt   1860
cttcccgttt gtttatattt gtatctcatt atcacctgac agcataatcg cccgaataca   1920
atactcagaa aatcggaaca gacaatcaaa aaacctgaat aacgaaaaat atagggcaga   1980
gctgcaagag ctggaagaaa gcgggagtcc aggcagctta ggaatctgat acacgatggc   2040
agctacatca tcgaggagaa agacgaatgc tcaacctctc ctcgaacgat tatctcggac   2100
tgactgccgg gaagatctga tagatgagtt ttatacctct atctctggag aggatcactt   2160
ccgggcagct gttcctcccg tctgctcacg ggcaatagta cggcaatgac agattggaga   2220
ggatgatagc ggaacgatt                                                 2239
```

(2) INFORMATION FOR SEQ ID NO:37

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 771 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...771

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37

```
ccgaatttgt gaaaataaat gattgcagta tgaaaaacaa tttttacaga gaagcttatt      60
ggcaatgagc gttttttcc  tcggcgcatg tgtccttttg gacagaaaaa cagtgataag     120
caggatgatc cgatcttgct ttatcctttg ggactacatg gtattaccac acaagtgaaa     180
aaacgagtat ggactccctt cgtatttcgg gtatatccgc catcgtgtcg agaagaatat     240
ccaaaaggcg aataccaagc tcaagagata caagtggttc ataaagattg gacagtcttg     300
agaccccgat ggagcctttt tacctatata gaaaaggagg taagcctatg ttgtagagtc     360
tgacggcttg cgactgctct atgatctcac agagaggttg gcgacgttat accccttccc     420
gtcaaccaag gtacagccgt cagggctttt ctcatgggac gacaacggtc attgaaaaat     480
ccacaatcaa gtcggtgggc gtgatttggt tcgacaagtt tatcgcctga attattattt     540
gcggaaggcc cgtggccgga gcaaggtaag cttgtcgaag taatcgaaat ttgggcattt     600
tagagctcaa tgcccaatat gaaaaacccc ttccatagga attattgtgg actatatcaa     660
tcccaaacca ttgctccgat gcttttcagt gatgacttcc gatacaaagc tcctttctgg     720
gacggacgtc cttgcatgcc tatggcattc caaatagtat gaccgctttg t              771
```

(2) INFORMATION FOR SEQ ID NO:38

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1548 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1548

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:38

```
tcaagggtaa gcagaagtat ctcttcgttg gtcccgaaga aatatcgggc aagtattggt      60
gcaacgcagc gacggcaatc cacgtataac gaacgtaaag atcttatcgg caagcccgtt     120
acagtcatgg cacatactcg ctatgccatc ggctccggca cctgaacgaa gaagtggggg     180
gaggtatcga ttcgctatcc tcagcggaga taccctcacg accgaagacc tgatcacgca     240
ggtagcaaag gagaaatага ctacaccttt gccgatgaac agttggcacg antgncngga     300
ccctactacc gcaatataga catcagtttg aaagtaggct tcgacaaagg ctgcaatgga     360
tcgtccgcaa ggacaatcat tgtctggcgc gggggtgaac cgatggggggg aatccatccc     420
cgacaaggaa tcgtaccgag catacagaag cgatacttcg agatgagcaa gagcgacgat     480
gaggtcgaag ggagcagtcc gctccccgac ctcgcatcaa gctgaggaaa gggagtatac     540
gcagtacgat accattttca agcactatgc agaggagttt cggctcggtg gtcttggcat     600
ctgctcgcat ccatcgccta ccacgaatcg cgcttcatgc cggtatcgta ggctggtccg     660
gtgccagagg tttgatgggt atcatgcgag gacaggccga cgcttcggag ccgacaagca     720
ggaacttctg gatccgaagt ttcggtacgc gtctccatcc gatgcctgtt ggcgttcaag     780
aacgatttcc cgatgtaacg gatccggaag aaaagctcaa gtttacgctc gctcctacaa     840
tgccggctcg ggtcacgtgg cggacgcaag gcgtttggct gcaagtacgg gggcaacccc     900
aacgtatggg acaataacgt ggaggcatac accgcctcaa gaaagaccct aactactata     960
acgatcctgt ctgtcgctcc gctatctgcg aggtgcggag acgatcaact atgtacgcag    1020
```

```
cgtaatggcc gttatcaggc atacaaacag aaggattgat accactactg catctaaaac    1080
agcatgtttc aggcacagca cttgaccaaa agtttcggcg atttggtctc ttcgaagacc    1140
tctctttcag tatcgaacgg ggcgaaaagg ttggactatc gcacgcaacg gcaacgggaa    1200
aacgaccctg atgaatatcc ttacggaatc gactcacccg attccggaga agtgatctac    1260
caaaacggta tccgcgtgca tacctgccac agcttcccca agtacttccg ggcagtaccg    1320
tacggagacc tgcttcggac acaacgatga gatgacctcc ctgatagcgc aagggaggag    1380
gcttcggctc ggggcgacgg caaacgcatg ggaggagttg cccccgaaat ggatgccctt    1440
ggcgcgtggg agtacgaaca gcgcgcgcgg agattcttac ccgtctgcat ctggacgatc    1500
tgcactgcac cacggacaac ttctccggtg ggagcttaag cgtatcgt                1548
```

(2) INFORMATION FOR SEQ ID NO:39

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 646 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...646

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:39

```
ggacttatgt gttgaacgaa agcttcgata cgcaaacgct tcctaacggt ggacaatgat     60
cgatgctgat ggtgatggtc acaattggct atctacaaaa acgtttacaa cactgctact    120
catacaggtg acggtgctat gtttagcaat catggacagc tagcagtggt gcaaaaattg    180
atttgagtcc tgacaatatt tggtaactcc taagtttacg gttcctgaga atggtaaact    240
ttctttttggg tttcatctca agagccttgg actaatgagc attatggagt gttctgtcca    300
caaccggaaa cgaggctgca aactttacga taaagctgct ggagaaaccc tcggatccgg    360
caaacctgct ccgatgaact tggtgaagag tgaggagtaa aggctccggc accttatcag    420
gaaagaacca tcgatctctc tcctatgccg gacaacaggt gtacttggca ttccgtcatt    480
tcggctgtac ggtatattcc gtctttatct tgatgacgtg gctgtttctg gtgaaggttt    540
tccaacgact acacgtacac ggtatatcgt gacaatgttg ttatcgccag aatctcacgg    600
caacgacatt caatcaggaa aatgtagctc cggccagaca actact                  646
```

(2) INFORMATION FOR SEQ ID NO:40

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 574 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:

```
      (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

  (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...574

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:40

cggcaacgct tttcatcgta ttagggacgc tgaccaaact gtatggtatg ttggcttggc      60
tttcttcccg tttgtgaaaa gaaaaggccg ctatttggtt ggcttttttgc atggttcggt    120
ctgatcggta tcttgccgat gttgtttgag gaggttctta tgcccttgag cagtatatga    180
attggtttgc tagcctggca cgaagaatgg ggagaatctg ttctccctgt atcaaaacgt    240
ttcccgctcg ggatggttag gaaaatgacc ggtattgccg gctactccga cttgtgttgt    300
tagtccccgg acttatccta ttcgctcttc ctttcctccg attagtcagt acaaggctcc    360
actctttcgg atgagcatat tggcttcgac tcgcttttca ccgtttatt cagtaccggt     420
agcgaatcga gtacttatat ctagcgttgt tgggtgtcgg tatctggttc atacatcgcc    480
ccaaagggaa cccgaccggc tggatattac actcttagtc ggaacactat tcctctcctt    540
ttatcgccga ccgatctgtc cctgcggctc ttcg                                574


  (2) INFORMATION FOR SEQ ID NO:41

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 1057 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1057

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:41

gactctaccg cgaaactata gacttttacc ccattcatat cgtataaaga gcttcctgcc      60
ctaaagaga ctcggggatc tcgacgagcg catatcttct accggattgg gatatatcct     120
gacagtggga gcatctactg ccaagttgat gtcggacttc cttcgtatgg aagcatattg    180
tcagaatcac cgttgagtca aatactcgcc agttcttact tttagctttt tccacatcct    240
ttacgtacag atattcttct catcagtgtc cttgaggtgt tcnaaacgac gaaattgctc    300
tgagcgcctg cgccgggaga tagtgtgggc aaagcattca ccatttcgtc atttcttcac    360
ctgcgatctg attggaatga caaaccaaaa catcagtccc ttcacccccg acagattcaa    420
ggatgtaagt ttgttcgatg acaccaaagg taagcaacgt ccgaattctt ggaaagatcc    480
aaggtcgaaa ctcattgtca ctgcaccaaa gtgttaccaa tagaggattg gcactcagac    540
gagtttcgtg atccgattac cgaagcacca aagatcattg agacgaggtt ggcactgagt    600
tccaactccg tcaggttatt atcagaacac caaagagggc caacttgggg ttgttatcgg    660
tcttcagctc agtcagctta ttcctgcaca gccgaggatg atcaaagccg gattgccact    720
caaggcccaa ccttcattcg ttagagtcgc accaaactcg cagcagcttt gggtttttgcg   780
tcaatccaat gatttcagat tatttttcgg gcatgcgaga taggtcagat taggtttttc    840
gttacatcga cagccgttgc accggtagat cgacagccca atgggtcgta ttaccataga    900
tagtgagggt ttgcgtcccg atcgtgtatt ctggtatgcc tcatcgaata cnggtattcc    960
tctccttgtn ggtaagtggc tccccattga gatcgatcca gatgcctttc ttctctatgg   1020
aatgaaccac aattcgattt tttcgcctac ggccttg                            1057
```

(2) INFORMATION FOR SEQ ID NO:42

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1271 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1271

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:42

```
ctttgggctt caaaaagata cgaggaccta tctgtaggta tatttatcct gttttttcttg      60
ttttattgag tggtagtacc tatttttgtg atgagagtgg actctcgtca tgtcgattaa     120
aaagaaaaca gaaatgaata agagtataaa ggctcaaaga cagaaaagca tttgctcatg     180
gcatttgccg gagaatgcaa gctcggtcgc gctatacttt ctttgcaagt gttgccaaga     240
aagaggttat gaacaaattg ccggagtttt catggaaacc gctgagcagg aaaagagcat     300
gccaaaaggt ttttctcttt cttggaaggc ggcatgcttg agaaacggct tcttttcctg     360
caggaataat cggttccacg gctgagaact tggcgcggcg gntgccggtg aaaatgaaga     420
gtggacagat ctctatccgg ctttgctgaa acagccgaag aagagggatt taaggagatt     480
gcagccgtat tcgtcagata gcaaaggtgg aagccgagca tgaacgtcgc tatctggctt     540
tttggctcat gtggaagatg gatcggtctt cgagcgaacg gaagaaatgc atggcaatgt     600
cgcaattgcg gctatgtcat tacttccaag aaagctcgaa gctatgtccc gcttgcgctc     660
atccgcaggc ttacttcgag ccaatgaaac gaattactga ggatcacatt catatagaaa     720
cgaagtaatt atctgtctca tgttttttgaa ggaggcaccg ctcgggagag tcgtgcctct     780
ttttgctctg ttattccctg cgaaaagcgt gtgcgtcatt ttgttttttc gaacaagtat     840
agagaccggt cctgtaaagt gggactctca cggttttttcc ggcatacagc cggattgaaa     900
agtgctaatc cgatgaaaaa accgtacttt tgccgaaatt acttaataac caaaccagta     960
accttagata ccttatggaa tgaaaagatt tttatcactt ggtcttctgc ttgtgggatt    1020
cattccgata agctttctgc ccaacaggct cagccactcc ctacagatcc ggctgttctg    1080
tcggtaagtt ggacaacgga ttgacttatt tcatccgtca caacgagacc cgaaagatcg    1140
tgcggatttc tttatcgcac aaaaggtagg ttctatcttg aagaagatag ccagtccggt    1200
ttggctcact tcttggaaca catggtttca acggtacgaa gaacttcccc ggtaagaact    1260
tgatcaacta t                                                         1271
```

(2) INFORMATION FOR SEQ ID NO:43

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 671 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...671

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:43

```
gcaaacctcc gacaaagaac tgcatctgca caatgtgaaa ctggctatgc aagggtggag      60
cgacatagct ccattaccct cagttcgcct ttccttgagg agcactgcat ggcgagttca     120
cattgtccaa gctgccttcg atgctcgagg agtggttggc gcacatcttc ctgcacttgc     180
gggccatagg tcgcagcaag agtgccgact gaggatgtcc gtctgcgttt ggcgttggac     240
ggctcttgcc caaggaagtg tgcagcttct tccggttgcc tttggccgaa gcggttctat     300
caagatcagg gcagcctatt ccgaattgct tcgaagcctc gattgcacat tcgtaccgac     360
aggctcatga ctatgaacaa agagctacgg gaacggaggt gaccttgaac tcatccaccg     420
gcaaggccga actcatctgt cgtccgactt gtatgtgaat ggcgatgcca cgacacgaga     480
cctcaacctg aagcatcagt ggcaaacgac agcatccgtg cccgactgga tatgggacag     540
acaagcgagg agcgaaaaac ggatttatat cgctgctcac aaacttcctc gggacgagga     600
ctcatcgctg aatactcata tcggtctcga tcgctctcgg cacgcatcgg cggtatgagt     660
                                                                      671
ggcagatagc c
```

(2) INFORMATION FOR SEQ ID NO:44

   (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1000 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1000

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:44

```
agtcctatac agatccgaca tttatgtttt cggacggtat ccgatgagtg ttttatcgga      60
tatccggggc tctcctcttc ttctttttgt acccacataa cttttttctac gcgagttctt     120
gcacatctac ggctcgtgtt tttcggagaa gtggcgcgag attttttttcg ttctggcgcg     180
taaaaatttt acttctgcgc caaaagcaaa attttcccgc gccacgtttt ccgagacatg     240
aataagaaat tttccgaacg caaacaatct gaacggacag tttgccatgt actgaaaagt     300
cgttgacaca cggaaaggtt gtgaagatcg atttccggct ctgtcgatct ccctttccca     360
ctaatccgac agatactgat gcccgcttac ccgaaaaaag agggagaaaa acgcttgtac     420
aactaaaaaa agatactacc ttgcatcgca atcgcggaag tagctcagtt ggtagagcat     480
aaccttgcca ggttagggtc gcgggttcga gtcccgtctt ccgctccaag aggcagtagc     540
atgcggccta tggcggtctc ctcatcctga aaaagggtgt atctttccag aaagatcggt     600
cgataacata gacgcccggg tggcggaatt ggtagaccgc tcgtttcagg tgcgagtgtt     660
caaaagacgt gcaggttcga ttcctgcccg ggcaccgact atcgaggaaa agacaaacaa     720
ttttttttgcg cgggtgtgga attggtagac acgctacttt gagggggtag tgccggttac     780
ggtggtgagt tcaaatctca tctcgcgtac ttttaatgaa gaggatgttc attgattggg     840
catcctcttt tttttgttta aggaaggtgc ccaatggcgt gaacggtata aatagatatc     900
tttaatcttt gtataataaa aaacaggcag atgaagcagc aggaaagcga gcatcccaca    ·.960
```

(2) INFORMATION FOR SEQ ID NO:45

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 724 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...724

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:45

```
ccgaatccaa agtctcaagc tctgcaatga ttgctttctt gctcttcagt tttcgcattc     60
ttcggagcgc atatctccct gttcggcttt tttacgttga agaatgcatc gcatgcagtc    120
gtaaaacgct tccatatctc atcactaacc gatgaggaac ggctccgatg gtttttccatt   180
tcttttggag ttcggcaagc gagtagaggt ttctttccag tcggaactct cctgaaggct    240
ctccgttctt ctaccatggc cagcttcttc ttgtagttat cggtcagctc ttcagtttgc    300
ctttgaagaa agctgttttc ttattgaaat aatcgtcaca tgcgcgcgga aacgctcgta    360
gatcttctca ttgtcgcttc tgcgagcata gctatagtct tccacttggc ctgaatctct    420
agtacggcct tcgtttgctc gcccatttgg ccagcgagtt cagaccggag gtatctatcg    480
cttccatttc tcacaaagca atgttttcgc agccagattc tcctgctcgc gcatcttttc    540
ttttcgaagt gttcctgata cttcttattg atagcaagta gaagcagctt gaatctcgcc    600
cacacctctt cgcggagttc gcgagctacc ggtcccattc gcgccattga tgatgcagtc    660
ttgcagtacc ctgaaagaat ggatgaatcc gcattctcag tcagcacttc ggcctgatgg    720
atca                                                                   724
```

(2) INFORMATION FOR SEQ ID NO:46

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2863 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...2863

```
attgttttgt gtgtttatgg tatgatcaat gacacaaaat gatggcacgc aaggaaaatc    60
atccaacgag aagaggtctc attcagggac gtcatgtcac gaatcgatac aggaaagccc   120
ggaatgtatt tttgacccaa gtcgatagct tacatgagag gatactatgg tctcctatga   180
gaggatacta tggtctacac gagaggatac tatggtctca tacgagagga tactatggtc   240
tcacaaagag gatactatgg tctcacatga gagaatacta tggtctccta tgagggatac   300
tatggtctta cacgagagga tactatggtc tcatatgaga ggaactatgc tctcacatga   360
gaggatacta tggtcttaca cgagaggata cttggtctca tatgagagga tattatggtc   420
tcacatgaga ggatactatg actattgatg gaagatgcta tctgctctgt gtcggatggc   480
aggttcgggg gtgggaggtt ccgtgcgagc tgttaaaccg atagatgaga ttgtcacacg   540
cattttccgg gagatttcgt tgtcaattga ctgtttttca gtgtctgtta tagacataaa   600
gtatcaaatc aagagtcgtt tgcttggctt gtcgggctat gaatttgtcc tgaataaata   660
gaacagggtg aagagaaggg tgagccattg gggtgtagct cgcaatgagg gaaaagcaaa   720
tgtcgtggtc agccttggca gagcgttcgg cgatggctgt ctcttctatg atacttcgag   780
ccattccaca ccttgtgaga tacgatgtgc cataccatt ccccatgca tatgccaccc    840
aaatgcaagc ccggccagcg catttccatc cgccggatga tgcctgccga agttccgtat   900
cggcgtagta ttgcggtatg gcatggcggt gcgtgagatg tgcagcagat ccggcttaca   960
ggtgtgaggt atgcgcagca atcgcgtagc tcttccattg caatcgtgct gatctcctcg  1020
tcggaaaggc tatgagcgaa gcatttcgca ccccacccat gaatatggaa tagagtgccc  1080
cccttcaggt gctctgccac ggaaacagtc cgaagggaac aggatgcgag gatgcgacga  1140
ttttccctcg aagggatcag gcacccgaaa gccggcggtg tgtggcaaca tttcggcgga  1200
accctacggc aacctctatc atggggcata atagagctgc tcgaacacgg ctgattcatc  1260
cgcagggaag tggtgaacag tgtgggggata tggtgcgctg ccaccgtact caccaagtgg  1320
cggaaggaat ggtgtgctcc tcttccgaag catccgtata ggtaaggccg aagtgtgtgc  1380
tcccgggtga ttgatgtatc ggatttgcgt ttccgtcagg agtgttcgcg tccgatgtag  1440
tcggccaaag cttcgaccag aagaccgagt ccccttgtac ggaaaagacc ttgcgcgagg  1500
ctttgcggtc gcgttcgctt gcggctgtcg ggcttttcga acggcaccca gtacgaagct  1560
gccgtatcct gctccagatc gtatagtttg ggcagggcaa agcgagtaac cagttggcgg  1620
gatctcctgc ataaatacct ccgaggaaag gatcgactgc gtagtcacaa aacttttgcc  1680
cagccggcga cgagccaagg ctccgaccgt ctcatgggtt gtccgcctct ccggcggaag  1740
ggttcgccga ggatacgcca tttgcccaca gggaaaagag aggagtagcg actgcctcgg  1800
cgatgttcct tggaggggat acagtttgtt gcctttccat atcagacggt tagaggccgc  1860
agagtggcta tctcaggttc caatccgagc agttcgaata gctcggccac tccggagagg  1920
agatcgtgcc ggtattcggc cctgtctcga acacgaaccc tcctctctgt aggtgcgtat  1980
ctgtccgccg atatgagcag ctcgctccaa ccagaacagg cctgccggca agctctgagg  2040
aaagcggctg tggtcagtcg gtgagcccgg ctcctatgat gacggtcaga tgatccatga  2100
atcaggctcc ccaccttcaa aggcaagagc atagaaacgc atctgcttga gcatgggacg  2160
aggccgttgg agcgtgtcgg cgagagatga tcttgcaacc ctactcgcga atgaagtaga  2220
gatcggacga aacgatgtct ttcggtttct ggtcttcagt atccgtagta gcagagccac  2280
tatccctttg acgatgaggg catgctatcg gcgcggtagt gcaccttgcc atcttgcagg  2340
gaggctgcta tcatacgcga ctctggcaac cttcgataat gttctccggc accttatctg  2400
cgcatccagt tcgggtaggg cactgcccat atcgatcagc agttgataac atccatccaa  2460
tcatcgaaag cggagaattc ctcgatgatc tgatcctgtt ttcgtttata cttggcatgg  2520
gataagctaa tgagtgaata gtcagtgtaa gcggctttca cctgttcgtc caaatatcga  2580
atgacggttt cgcccacgca tcgagtacat ttttgtcgat gatctgcata ttgtccctct  2640
gggtatccag tggtcgccga agccatgttc gttcttggac gagtaattga taatacgatg  2700
caagggatcc ctaaattctt gatcacaggt acatgatcat ctgtagagcg cctccgtcgg  2760
cttggatgaa gtagttgcca tatcctaatg cggtgccgtc tgccatacgg cagagatcaa  2820
ccccgggca tagctcttgg agagtactcc caatagaatg tag                      2863
```

(2) INFORMATION FOR SEQ ID NO:47

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 629 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
              (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION 1...629

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:47

```
aaagtccaag gaagagttgt ctgcttttct cggctgtgag catatcgagg ctgcaaatgc      60
ttcgtcaagc aggagcaatt gcgggcgttg gagaaatatc gtgccagtgc cacacgctga     120
cgttgccctc cgcttagatc cttcggaacc gatgcaatat gtccgacaag ccgagggtgt     180
gtacaatgct ctcaaatccg gcatctctat ggcttccttt cgcagggtat atggaagtac     240
gatatctcat gcactcgttt ccatggcaaa agcccatatt gctggggaac tattctatgg     300
aaaaagattt cggattcaga ggtttcccat cgaatagcac ttcccctcat actctgtcag     360
tacacctgcc aaaacgtgca ggagtgttga ttgccacagc ccgaaggtcc cgttatggca     420
aaaatctctc ctttgggaat atcagtgaaa gaccgtccaa tgctttcact tccgtactcc     480
cgtggcgata gtaacggcca gattgcgaat agagatcatt tgcctaatgg aggaatctgg     540
tttcgtccgt ctcttgatta tgccggactt tacggatcag atccttgcgg ttagtcgctc     600
gggaccaatt tcttggcatg tacccagtc                                       629
```


(2) INFORMATION FOR SEQ ID NO:48

        (i) SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 581 base pairs
              (B) TYPE: nucleic acid
              (C) STRANDEDNESS: double
              (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
              (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION 1...581

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:48

```
tacaaactgg acgttgtagt tattccgaca aacaagccta tcgcccgtag gatatgaatg      60
atcgtatcta taagacggca cgtgaaaaat atgcagcatt atcgaagaga ttgtacgtct     120
tgtcgaagag ggcagacctg tacttgtggt actacttcgg tggaaatatc cgaattgttg     180
agccgtatgt tacgctgcgt ggcatccaac cacaaatgta ctcaatgcca aattgcatca     240
gaaggggccg agattgtagc tcaggccggt cagaaaggaa ctgttaccat cgcacgaaca     300
tggccggtcg tggtaccnac atcaagctct ctgccgaggt taaaaagccg ggggtatggc     360
tatcattggt acggaaaggc acgaatccag acagtggaca gacagcttcg tggtcgttcc     420
ggccgtcagg gtgatcccgg tcgtccatat tctatgtttc ccttgaagat catctgatgc     480
gcctctttgc acagaaaaga ttgcattatt gatggatcgt ttaggtttca aggaaggaga     540
gtgctcgaaa actacatgct nagtaagtcc gtggagcgtg c                         581
```


(2) INFORMATION FOR SEQ ID NO:49

(i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 633 base pairs
    (B) TYPE: nucleic acid
    (C) STRANDEDNESS: double
    (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...633

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49

```
gtgctgatga cgttagccgt ttactcattt atgcctctga tccggacgaa cagatctcat    60
tgtgacgcga gtgttcgatc gcctttcgga aacactctcg tcggggaaca acgactgacc   120
atcaatacgg ctacagaact gaatccgtga ttatggattg gctctctgcc ttggacacca   180
atgttgctat cctgctacac tgatgggatt ggtcggaggc ttcacgatga tagcccggtc   240
tgattttttg gtcatggaca aaacgcagtt tatcggcatg ctcaaagctt taggtgtgct   300
gaagggtcgc ttcgccgcat attcctctat ctggctatga tgccgttggt cgtggtatga   360
tctggggcaa tgttttggct cttatactct gctcctgcag caacatttcc gctggttgcg   420
tctccttcga tcctgatatt tctacatgga ctatgtgcct gttcaagtgg actggctcgt   480
atggattctc ttaatttggg taccctcctc gttaccttct tgatgctcct tgctccatcc   540
atattatttc gagaatttcc cccgtcaaag cccttcgctt cgagtaatgc ttcaccaggg   600
aatagggtag gtcatctgtc cattcgagac cat                                633
```

(2) INFORMATION FOR SEQ ID NO:50

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2664 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...2664

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:50

```
ggcaacgtcc tccgcagtgc cgaaaacacc tgcattgccc gatatacctc gaggcatgca    60
gcagcttcgt cgtccacggt accgcggacg atgcttttcg tagaaatttg tcgttctgtg   120
ccggtgcaat gcgcgaaacg gaatattatc gagtggaaga taaccgagcg aaccggctcc   180
gatggggcgg aatatagttc ttcgacaaag acgttcaagc tcttgcccga tactttttcc   240
```

```
acaattgctg tagcaggata aaccccagat ccgaatactt gtagcgtccg actcattgcg      300
aggggtagaa gcgatggtat tgaggacaat ttctttgacc tcttcgatag atacagattg      360
gaagaaaaac gaaacggata gtccggccga aatgcccgga aaccaaatcg gagcgaaatc      420
cgaagaatgg attgccccac aattggtatc tactcgaacc catcccgaac tccgccgggg      480
agagagcaac tgccgtccaa actgctactg tctatcagag attcgtagaa attgatcgag      540
gccgaaggcc tgcttcatga agtagaagct gctgtacggt gatgtcttga ggtctgttcg      600
ggcaaaacga ggcaatagcg ttccgagccg gtcggaggct tcaattttcc atcctgaacc      660
aatagcatca cagccggagt agtggcacga ccttggtgac ggatgccaag tcgtagatgg      720
tggaagaaga cacctgcctc cacgtgccga tccgtcgaga gtgccgaagc ttttgtcata      780
taccccttgt ctcgatggac agcgaggata cgacaaccgg ggaaagcccc ttgcttaggg      840
cttctttcgc tatgcggtct accgccggca tcgggatgag cggacgaca attcggtcgg      900
cggcatcatg ttcgctgtcg gatcaagtgt ctcctcttcc tgaacgaccg ggatcccacc      960
gcccgaggat accacaactc gtcccgaatc ttggaggctg ccattcgagc agcctccttt     1020
acgtttcatt gccacgacta tagcccgagc tttgtccata gccgccggaa tcctatcgct     1080
acatagggcg atgtgaagaa gacgatggca gtgtggtttt gttccgtagc cggtggagaa     1140
acgttcctgc ccagtccggc tgtgtatgtc gaactggacg atcacagcat cgtacccctt     1200
gagtttggag agcaactctt gtgtagtgta ctgttgctgc ccttggcata ggaatagcag     1260
tccttgctcg taagcccagc tcttgtgtaa aagtattgga ggctgcacca tctagattga     1320
cgctgcaata cggtttccct ccgagagggg gaggaagtgc ttcttgtttt tggaatcgta     1380
atggatgcct gccaaagatc ttccgacatc cgttccgctt ccggctgttt acctgtcgta     1440
ccacttcctc tgccggtagc tccttggata tcccttacaa atgatgagcg cacacttgaa     1500
ggccagaatt ttgcgacatt ctcgtccagc aattctttgc ttatcgttct gtcttccact     1560
gcggccagac ctcggagaaa gtcttgaccg ggtccaccgg accgaggagg atgtcatgcc     1620
ggccaatatg gcacggacgg agatcggttg agaaccggct gtctgtctcc ctgcatggcc     1680
agtccgtccg taaagatcag ccccttgaaa cccattcctg ccgaagcaga tcggtgcaga     1740
tggcatgact gagggaggag ggcgattttt ctttgcttcc aaagccggaa cattgaggtg     1800
agcggtcatc actcgctgag gccggctcgg aaaaactcct tgaagggggaa caattcagta     1860
tttccaattc ctctcgggag gcaaagaccg tgggcaaggt cttgtgcgag tctctgtggt     1920
attgccgtgt ccggggaaat gcttggccac ggccatcact ctccgtcctc caatccttgt     1980
gcataggcaa tccctctttc tgctactcgc gtgggttgtc gccgaagctg cgcgtgccga     2040
taacagggtt cttcggatgt tgttcacgtc cagcaccgga gcaaaattga tatgaatccc     2100
catcagcggc attggcgcgc tacctcccga ccatagttgt agaggagctg attgtctttt     2160
ggtgtcccaa gcccatattg cgagggaagc gtggggcatc tttcaacgca tgtgcaaacc     2220
ccactcaccg tccagtgcta tgaggagagg ggtgcggctg cttcctgcaa gcggcgagtc     2280
atcgtgtatt gctccgagag tgtccctttt ggaagagtat gcccccgatg tggcaggtgc     2340
gcaccagctg ttggcttgct ttactttttc ttcctgtaaa gagggataga cgatcggcat     2400
ggcagctggc ctactttttc ctccgtgctc atagccttca tgcggtcgtc acccagcgtt     2460
tgacatcttt gctctcgact cccccgaaga ggagaaagga tagtctttgg actgctgggc     2520
atgcatggca cccatgttcg tgcgggccgt gccgtagctg tgtacagcac cgagagagag     2580
agtattgtga tggcggaaaa agaaatcgtt tcatacccta caaatgtaca taaaaatggt     2640
ggccgatccg agccttccct tcga                                            2664
```

(2) INFORMATION FOR SEQ ID NO:51

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 2706 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
          (A) NAME/KEY: misc_feature

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:51

```
gattcttaga aaagttgatt attaacgaca aaaacaaaat ataaagatga catcgtactg      60
actattctca tcctgctcat atcgctcttc cttattctgt cgtagtggta cagaactcca     120
aagggggcgg cttggcagcc ggcttcgatc cagcaatcag atcatgggcg tccgcaagac     180
taccgatttc ctcgagaggc cacttggtgg tcggccggta tcattgccgt tctggccatc     240
gtttcactca cttcctccac acgggaaagg tcgatgagag ccaaaacgtc ctgaggaaac     300
cctggacaag aaggtgaagg aagaaaagaa ctctgcagtg atcacttcgg tggagatgcc     360
gctgctacgg aatctgcccg gcccgcgacc gggaggccac tcccgaggag gggcaggcac     420
aataaggagg accggcccct tcatatccct tgcaggagat acggggatcg acagacgtct     480
ttgtctttga ccgaggcttg agggcaaaga cgttttgttt ggcagggtgc cgctcgccga     540
cgccccggga caaggctcaa ggggcggaac ggacagagcc tccgaggggt acgacaagcc     600
cttgcgaacg gaacggacgg acgtacccga aaaaacgcta gacgttccga caaaaacgtc     660
tagacgtttt gactgaaacg tctagagtat cgaagcaaac gtctagacgt ttttcgcgaa     720
aggtctagac gttttacaga cccgaccttt tggcagaaga caagagagat gacaaagaga     780
ctatcctgcc cgaatgggca ccgcaagagg ccgtacaatt gacctggcct cacaccgaac     840
cgactgggct tatatgctcg acgaggtgga aacctgcttc gtcgcatagc caccgccata     900
ctccgccacg agcgactgat agtcgtttgc ccgatcgcaa gcgggtgttc ggcctgctgc     960
ctcccgagct gcaccaccgg tctactgctt cgagctgccc tcgaacgata catgggcgcg    1020
cgaccacggg gcatttccct cctcgccgac ggccgtccga tgatagccga cttcgcctca    1080
acggctgggg catgaagttt gccgcccatc acgacaacct catcacggac ggctccacgc    1140
cctgggcctg ttcgccgaag gagttaccct ggacaacgcc tcgccttcgt cctcgaagga    1200
ggagcactgg agacggatgg cgaagtactt tgctgaccac ggacagctgc ctcttcgagc    1260
cgaaccgcaa tgccgcctga gccgcacggc cattatcgac acgctgaaag agagcctcgg    1320
cgtagccgcg tactctccct ccgccacgga gccttggccg gcgacgacac cgcgggcaca    1380
tcgacacgtt ggcgcggttc gtcgacaccc gtaccatcgt catgtccgct cggaagatcc    1440
ctcggacgag cactactccg acctcacggc atggagcagg agctgaagga gctgcgccgc    1500
ccggacggac agccgtaccg ctcgtgccgc tgcccatggc ggaagctctg tacgacggag    1560
cggacaggtg cccgccacct atgccaactt cctcatcatc aacggggcag tactcgtccc    1620
acctacgatt cgcacctcga tgccgtcgcc ctctcggtga tgcaggctg tttcccgata    1680
gagaggtcat cggcatcgac tgccgtccgc tcgtcagcag catggcagtc tccactgcgt    1740
cacgatgcag tacccccaag gattatacgc taattccaca gcaaagaact atgaaagtag    1800
cactcattca gcagccaaca cggcggacgt ctgctcgaac cgggagcggc tggcagcgaa    1860
gaccgcgaag ccgcccgacg cggtgccgag ctggtcgtac tcccggaact gacaacgggc    1920
tttatttctg ccagacggaa gacgtgcagg tgttcgaccg gcagagacca tcccgggacc    1980
gagtaccgat ttcttcggca ccatcgcccc gaagccggcg tcgtgctggt gctctccctc    2040
ttcgagaagc gcgctcccgg ctttaccaca atacggccgt cgtgctggag cgggacggca    2100
ctatcgcggg aagtatcgca agatgcacat ccccgatgac cctgcctatt acgaaagttc    2160
tatttcacac ccggcgactt gggctttacc cccatcccga cgtcctcgga tgcctcggcg    2220
tactggtttg ctgggatcag tggtatcccg aagcgcgcga ctgatggcca tgcagggtgc    2280
cgatatactc atttaccccca cggcatcggt accgagagta cggacctgcc tgccgagcag    2340
ctccgccaac gtaggcgtgg cagatcgtac agcgcggaca tgccgtggcc aacggtattc    2400
cgtggtggcg gtgaacaggg tcggccacga ggcagaccct tcaggccgca cggtggcatc    2460
acgttctggg gctccggatt cgtagccgga ccgcagggca actgctggcc gagctgagcg    2520
caacggaaga ggcggtggag gtagtggaat agatccctcc cgaaccgagc aggtgcgccg    2580
ctggtggccg tcttccggat cggcggatcg acgctttctc cggccttacg gancgtttcc    2640
ttcgcgctga ccatcatggc gagaggggggg atggcgttcc gtccttccc cctccacaag    2700
gagccg                                                              2706
```

(2) INFORMATION FOR SEQ ID NO:52

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1361 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...1361

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:52

```
cgtaagatcg tgaagcctat atcaagcgtc tgaatatctg aagcactcgc atgtcctatc      60
cgggcgttat caagacctat gctattcagg ccggccgcaa ctccgtgtga tcgtcggtgc     120
cgacaagacg gacgatgcct cggtggaacg ctctcgaacg aaatagccaa aagaatccag     180
gacgagatga cctacccgga caagtgaaga tcacagtgat ccgcgaatct cgctccgtca     240
gctacccaaa taatcccgca caccggtgga tagtacctgc tcgcatgatg tggcgttatg     300
atttatacct cctcctatca gcagcactag aggactacgc cggcaaagca aagacggat      360
ggactaccga ttagacaata cgacgacctc ccgacgaagg atgcctgcaa ggggtgtcat     420
agccagccgc tcagcactta tactggctga atgacatccc cgatttgccc gaagatggcg     480
gattcgtgga gtacagttca agaatacgcg caaaggatac tacctcaaca gcgagaggaa     540
gagctgcaca aaggggatgt agtagccgta gaggccaatc cgggtcacac atcgggacag     600
tgacgctgac cggcaagttg gtaaaactcc agatgcgaag catcgataca atacgaacaa     660
cggcgagcct ttcaaaatat accgcaagcc aaacagggcg atctggataa gtactgcgaa     720
gcaaaggcgc gagagacgat acgatgattc agtcccgtca gatttctgcc gagctgaatc     780
tggaatgaag atcggagatg tggagtatca gggcgatggc aataaggcca tttctactat     840
atcgccgatg agcgcgtgga ctttcgccaa ctgatccgag tatggcagag accttccata     900
tccgcgtgga gatgaagcag atcggtgcaa gcaggaggcc ggccgtatag gcggtatcgg     960
tccttgtggc cgccagctgt ctgctcggcc tggaagatga atttcgtatc ggtgaatacg    1020
agtgcagccg ctatcaagac ttagctctca atcctcagaa gctcacgggc ctctgcgcaa    1080
gctcaaatgc tgcctcaatt atgaggtgga tgcttatgtg gaagctctaa gaagatgccg    1140
agtccggaga tcgtcttgga gacgaaagaa agtgcgacca ctatttcaag gcggatgtat    1200
tccgtcggga ggtttcgtat tctacgttcc caatgctccg gtcaatctta cgactatatc    1260
ggctcgtcgt gcttcgaggt gatcagccag aacaagcagg ggttcaagcc ggtatcgctg    1320
gagatgacga caagaagcag tcgtccggac acgaattgtc c                       1361
```

(2) INFORMATION FOR SEQ ID NO:53

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 751 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...751

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:53

```
gtgtttttgg cgataaggtc tgaccttgaa aaaaaggatt ctcaaattgt caatatattt      60
```

```
tcctctatgt cttatcgatt ctgatatata acacaacttt tcttttgaag tgggtatcag    120
gcttatgttc tatccttta tgttcatttc atattgatcc ctaatgctta tgtattgtca    180
gataaaatat ggcaaaaggt gtgattttgg ctattttggt tgtgttctca ttctttatgc    240
ttaagatctc agcagtccag ctgaaccata cgctaactat aagtctatac tctttgaaaa    300
atactgttta gagaattatg atcgtgcatt ctcccttggt caggtgctta ttcctccata    360
caacgtggag aaatcagaaa tcgagtctga tttgaaatag cctacttgaa tgtagctaaa    420
atgtttatg acaaagctcc cgcaatcaat ataagacgat aagggaatac aggccactga    480
atccgaagag atcgcctcca tgcaatacca ttcgttaatc cgatttaggt ttgcttgtca    540
ttgtcagact cttctgttct gagatattta ggatattttc tgtgtaaaca gaacagaaga    600
taaaaagaat gatgagagcc tgactttgtg ttgccacgtc tttttcctac aaagtaattc    660
gacataatat gataaccgtt gcccattgat caataacatt ggccaatcag gaccggggat    720
                                                                    751
agtcatgcgc gacatattcg acacatggat c
```

(2) INFORMATION FOR SEQ ID NO:54

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 911 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...911

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:54

```
aggttctccg tctcacacag atcgatgtgc acagtttggg tgagctgcgg tcaatcaagc     60
actgcgcaat atcgaagctt tctacgaagc tttcaataac agcctactga taagatgtat    120
ttggaacccg aaaagcgtgt agtcgttggt aagctgaccg acactcctat acgggaaaag    180
aggctacgtt ccgaggttat tccttggaac gcagcctctt tcgttagaaa aggaacctaa    240
tcggaaggaa agagcataag gaggggttat aaactcggcc tatcgctcat cagataatga    300
gaccaattcg agggacgctt ggtaacggct gccaccaata cacgatcttg gccgcaaagg    360
cttctgccaa tggctcggcc gcagcttgta cctagccccg gtagtcagca catcgtccac    420
caaaagaaca cggataccgg cacgcgcgta ttcggggaga gggcaaactt cccttttcatg    480
gctgactttc ttccgaatag gactgtccgg tctgactgtc cgtatatacc tttctgcgca    540
accttcttga acaggtattc ccgttacgcg acttaatcct tgtgcgatag gagtgcctga    600
ttgtagccac gcttacgttg tttgcgtggg tgtaaagaac cggcactatc agatcgtaat    660
ccttggacag gaaaggatag gatcggcggc cattcgtccg agcatttcgc cgatctcact    720
gtatcctcca tatttagtgc gtgtatcata ggccttacac ccccgtcctc tttgaaaata    780
aaaagctgta cagcgcgtcg atataaacat ccccattcag acgatctaat ccaattgcat    840
cccttcgata taccgnggca ttctcaccat gcaacgagga caaccccgat ctccgtctcg    900
                                                                    911
gcgagcaagc t
```

(2) INFORMATION FOR SEQ ID NO:55

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1317 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

       (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
              (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION 1...1317

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:55

```
aaacgtatcc tcatagcctg cccctccttc gtgtgcgact gtctggagac ctcgaagaag    60
tagccgatca cggacaaagc attttcaaaa aagcaggagt gcggatttca cttacatccc   120
ctgtctcaat agcggggcga attggatgat gctctccgaa acattttaga ggaataatac   180
agcatgctca gttatctacc gatataccga cagacctgcc cctcctgagg caagccgtcg   240
aagcctccgc cgggaagaat ccggcggtgc cgtacccgac tccgatcggc cgaggtgata   300
tacgaggcgc gcaaccggct ttacgccatc cgtaccgcac aggagagcag gtggtgaaga   360
gcttccggat ccctattgcc attcagcgcg tgtctactca ttcttccgcc cctcgaaggc   420
tgctcgctct tatcgcaacg catacggctg gggcgatgcg gcatcggcac tccgcgaccg   480
tcgggctatg catcgaacgc gaaaaagggc ttctgtgcag gagctactac gtctgcgaag   540
catgcacgac tgtcgggata ttcgtctctc catgcaggga gtggaagggg cgaggccttg   600
ctccgtgcgc tggccggatt catcgcccga atgcaccagc aggcattcat cacattgatt   660
tatcgccggg caacgtactg tatcggcaga cgagaaaggc gagtattcgt tctacctcat   720
agacctgaac cggataagtt ctacgacaag ccgattgtgg ggcggaaagc ctatgccaac   780
tttgacgtct gagcttttgt ccggcagtga gcaagcagct tgccgaatat tatcagaggc   840
acagggcttg aatacggacg gagtggtcca aggggtacaa aggaatcgga tcggttcttc   900
cgcagcaaag tccgcaagta tgctcgcaag gattggtgcg cgaacaaaag cgaatgagcc   960
gctccgcttt ccgtcgggca atatccgcta tcgctcggta cgccttatcc gaaaactcac  1020
gggctgcacc gtctcttccg tatcgagaac gatctgtaca catcctatct tgaagtggcg  1080
acctgcgcca tacactgaaa agagccgaag gatattcctc gccgaaaacg ttcaataaga  1140
aaaaggaaa ccgaatgaat cgtatagctt ttgatgcaag agaatcacat ccaacgccac   1200
cgggctgggc aattacagcc gcttctggtc gaagccttgg ccgcctttca ctccgaacac  1260
cgctactacc tctgtctccc gggaagggca atccggctct gtactccgcc ttgcagc     1317
```

  (2) INFORMATION FOR SEQ ID NO:56

        (i) SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 1820 base pairs
              (B) TYPE: nucleic acid
              (C) STRANDEDNESS: double
              (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
              (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION 1...1820

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:56

```
aaaaaatctg atcatacgcg ttgcagacaa tggcatagga atagataaac tgatcaggct      60
catatcttcg acatcttcta tcgaggacag tccgctacga aaagcatgga tcaggcgtcg     120
gactctcgtt taccaatata ctggtcgaaa ccttcgaggt acgatcaaag tggaaagcca     180
gccggggaaa ggaagtcctt caccatcagt attcctacac aaaaccagtc ctcttcggca     240
gagatcttcc ttggctaccc tcctccgatg acattgtcat gcctgtccac atcggcccga     300
tgactcaccg acatctccga tggtagcagc tctgaatcat cgctcgagga cgaacgtccg     360
accatactgc tcgtcgagga caataaggat ataacctgct cgtcaaacta ctcctttgcg     420
atcgctacaa tgtgctatcc gcgcaaacgg aaaagaggg atagccctcg ctaccgagca     480
tattcccgac ttatcattac ggatattatg atgccgataa tggatgggat agaaatgaca     540
tccggatgaa gcaatcgcct ctgctctgtc acattcccat tgtcgcttga cggccaagag     600
taccgaacag gacagattgg aaggaatcaa aagcggttag tctcttatct atgcaagcca     660
ttctctccgg aggagctttt gatgcgatcg agcagcttct gaaagaccgt gagttgctca     720
agaagttcta tatgcaaaac tcatgctgga tcggaagccg gaggaggagc ctcaaccgat     780
agatacagca gtatgcagtt tctccttgct gccaaagatg cagtgtccgg tggatcaaac     840
aaaatccgga tttttccgct caagacttgg ccgaaaaaat gtcatgagtc catcccaact     900
caacagaaag ctcacgagtg tcgtaggttg cccaccatcg gctacataca gcagatcaag     960
ataaaattgg cctgcaagct cttgccgatg agagcaaaaa catctccgac attagcattg    1020
aggcaggctt tcggatccgg cttacttctc tcgcaccttc aaacgctaca tgaactgcct    1080
ccctcccaat atcggcaaaa actccttgcc atgccgggga gcgacaagag acagtttgat    1140
cccaatgaaa taaggagctg tacgcaaggg ggggcctgtc gtacagctcc tttcttcgaa    1200
attcgatccg aactacatca tcgaacacga cttttctcac aaaggctccc tgatccgtat    1260
tcactttaag caggatgtcc ctttggtcaa agatccgaca cccatttcca ccttatcgcc    1320
gctaaggcac aatcacggat aagcttaccc tgcaagtcgt acatgctcag attgtgatgc    1380
cgttggccag aatcactaac cggtccgttg acggattgag aagactgcta cctgagcttc    1440
tgtcgaaggt gttgccattg aggtaagagc ttgtacgtat agatatagtc gaatatagga    1500
gtagccacat ctccttcgtg gaggaataag tctctttcag tcgctttgcg ttgaatccgt    1560
acatattagc caggtctgtt ccggcattga cggaatgtca atgacatttg cggagatgac    1620
ttatcgctct cgatgtctcg cttgtacacc tttgtgtcgg taccgtaata gccaaatatt    1680
gtatgcagat attgtcctca taggtgtatt cctctttttg agtacttgcc atgcctttcc    1740
ttgctggacg acgaagtact cggcttcacc atattatctg catcgtcata gctgtattcc    1800
gttttgcccg gtgcttgaat                                                1820
```

(2) INFORMATION FOR SEQ ID NO:57

     (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 513 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...513

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:57

```
tgggctgtcg tattccaacg tgccgaaggc gaagtctggg ctgccaccgc catcgctctt      60
ctcagagact ctatttccgt cttgcggcgg acggactcgt atggcagaaa acggttactc     120
actgttcacc gagcgagata gctgggaggt gacgctgttc tctttttctt gcgttggggt     180
tatacacctg ctgatacaca ttgatccgcg aaatacggaa acttcccccc ggccatgccc     240
tacgcataga gtcggagagg gtattacgac cactgcctat gacacagtag accgtatgcc     300
```

```
ccgttngaca gccatttttt tatcttatga aggaggntta aagagtnnct gaacccccgc      360
cttattcttg ccggcaagag actcgttcgc tactgaatgg cagatcggcc atacttcccc      420
tttccggagg atttcgactc gggatgatag cctacatgct gcatcgtctg aagtacccac      480
atgtctattt tatctcctat ggcaaagagg aaa                                   513
```

(2) INFORMATION FOR SEQ ID NO:58

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 711 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...711

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:58

```
ntccccggcc cacatcgtcc aaacgggcag cagcccttcg ttttgctcac gaaagcgacg       60
agactttctg ccatatcggc tgcacgttcg ggaaaaagat gttgtacaag gggtgggcag      120
ctcggtaggt gtcccagagc gagaaggact gtagtgtttg cgtgccgtct ttagcgtatg      180
gatctttttg tccgctctct gtaacggcca tctgcatcgc tgaaaaccgt cgggcagagc      240
agacttgata gagcgcggta tagaaaatag tgtccactcg gggcgatatt ccttttccgc      300
cactatacgc gacaaggcac gttgccacag cagcgatgct tcccacggta gcggtcgaaa      360
tcgtggtggg gagcttcttt cgccagattg ttgccgctcc cttttcgtcc acgcccgata      420
gggcggtgga gatcgtcagc ggctgtcgga cttggctatt aaaaacgaaa ggtgggctac      480
aaggccgtaa caatgaattg cgtcgtatcg ttattggcat attggggtac actgtctatg      540
tgaactgctc tatcggaaga gaaaatctgc tgcggaagaa tatgcgctat cccgtgccca      600
accgtccgag aagcgataac cgcttatcgt gtggctgcga tcagctgcag acggcttgtc      660
tgtcgtcctg tcccaattca tcgtgcattg agatcgaggc gacttcagta c                711
```

(2) INFORMATION FOR SEQ ID NO:59

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 796 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature

(B) LOCATION 1...796

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:59

```
atgtacaagt gaacaaaaaa ctcgctcccg atgagtataa gatatggcgg actccgtccg      60
ccgcagtatt gccgaattgg gaactcctat tgcatacgcc aaacgttcaa tgtgtcgtat     120
acgttgccga ctgcccaaat atccgcatga attgggtgaa tggttcattg acttataatg     180
ccgtgtataa ttgggacgtg gagcgaaaac gactaccgaa caaatcattg ggaacacgat     240
ccggatcagg caacgctgga acttcccctg caactcaatc tgacatcgct gtatgcaaat     300
ctgctttcct caagagaata gagcagcaca tcacgaatcc ggaaaaaagg atcctgtaaa     360
aaaagcagcc cagccattga ccaagaaaat ccgttgctcc ccgattccac ggtaacactg     420
acgcacactt ttgcgtccaa gaagtgagag tgtccgctct cggtccggat ggcaagatgt     480
atccgctgaa acaaaaatca aggacaagaa tacaatcgtc attttaaata atgacagcaa     540
gagatcaatg taacggtaac tcccccgagg cagaacggct ccactcctca ttcggtgcga     600
taggcgaaag gatggtatac gccttgatga tgctcaaagc atcaacctta actaccggca     660
atcgtccggc ttgcatctgc ccggatcttg cccaacatca aagctgcagg cggacaaggc     720
tccgtggatg gtgtttggca ccgggatggg actttgcttt cggtcttacg ggagaagatt     780
tcgtgaaaaa gccgcg                                                      796
```

(2) INFORMATION FOR SEQ ID NO:60

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 766 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...766

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:60

```
ccgttcaaca cataagtccg tttgtcggat gcgggggctt gccaagtgag gtcactgtct      60
gcccggatac agaccattgg agattctgta cgggagcgat tcattgccac cttctccggt     120
cactacaacg gacgcagcat cgccgggcct tgtcgttgga cagtgaaatg ataagtctta     180
ccggcctcta ccacatatcg ttacctttgg agacaccctc tcctactata tatattatgc     240
caggatgggg ttaatgatta catagtcata agtgccggca ggaatatcgg ctgagctgtt     300
ccatcaagca cgaaattcgt gggagaaaaa gatgcatcgg catgaccgga actttatact     360
cgaaaggatc gtaaagaccg gccgggatcg ttcgttggca aaccaaaaag attcttcggg     420
aatggatgcg ccgtactgat ttgatctgca tcccagagca tttgatagcc tgtgccgtct     480
tcccatacat gtgagcctcc aagataattc gtgccatacc ggcaggaatc ggatctcggg     540
atccttggcc ttggatgttc gaataccttt ctgcaccgct tggtgcgtac agaaggagca     600
gtcttcggcc ctccctgtgc ggcagccgtc tgtccccaca caatagggat aataggacgg     660
cgagcgaaaa taaagaattc aatttttcat accttttgaa agtattaaaa gattaatggt     720
tttcgcaaga atagtctcta ccactattcg gcccgaaaag aatatg                    766
```

(2) INFORMATION FOR SEQ ID NO:61

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1914 base pairs

(B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...1914

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:61

```
ccctggctaa tgtctatccg atcaatagct tcgacggtat ggctaccgaa gtctcggacg      60
ctttcgtttt acgacgagca gcactttccc gatgcgtccg tggtttcgca tatcaattat     120
cactccgata cgcttaccat tcggaaggag atccgatgga gaacatccgc atccgcctgc     180
gcgagaccga tgactaaagc tctccgaagt cgtcgtcagt gtctccgctt tcggggtggg     240
aggcagcaga acaagacggt gctcaatcct atggatgtct acacgaatcc aagtgtaacg     300
gagatctctc gatggcgctg cgtcagacac ccggcctgca ggagtgggag atcgtgaggg     360
ctttttcgtt cgcggaggag cctcttggga aaggccgtga cgatagaagg cattagagtg     420
aagcgttttt tcggcaagaa cgattcgacg ctcctgctcg ttcacgtttc gagacaggaa     480
tgttcagcgg ctttcgctct ccaccggagg ctatggggcc acggaaggcg gtgcgctgac     540
ggactactcc ggttgcgatt ggcgggtaag tctccctcgt ccgtcgggta ggaatatccc     600
cgcttttttgt aaacggtggg ggtgggcatc tttccagtcg aatcgtttct atatagagca     660
aaatgcctca gtgagcgatg ccgccttatc cgtctgctgc tcaagccgga gtacaaactg     720
cccggtacca accgccctat gcctacaatg cacggacgat atggaacccg acttcgcaag     780
atgagtgaag gggctttttc tcttcgtaca cgacctttcc tcttcggctt tgccataccc     840
tctcctgcaa ctgcatatat gctctatgcg ggacgaaaca ccatggattc gggatggctg     900
tttggaggca tgacttcgaa ggaggcaaaa cacctccacc ctgtccgccg gctatagcga     960
agaccacaac cggctgcacc ccagcttgaa atcgagccgg acatagagag cactttccgc    1020
accgtagagg cgatgccaat atccgccttc gcttcgattc tcggattaag gcttggaact    1080
ctcctacgga tccgattata catatagcga agccaagtct tctgttcgga ggataaatca    1140
tcagccttac ccacactgcg agaacacctt gtggcaccta tgccgaagcc ctcttccctc    1200
tgtcgaatcg gatctccgct acagcggatt gcgcgccgaa tattccggac ttaccgagtc    1260
ggctattatc ctacccgttt gtcagccact tacaagctct ctccttcgag ccggatcacc    1320
ttgatgcagg aggctatgcc gcccccggcg actactacct ctcccatggc atgtgccgca    1380
aaagcgcgaa cactcgcagc agtacaacct gacctatgaa tgcgaccctc gcgtacacaa    1440
gtgctacgcc tccaagccta tgacaaagaa attcccgact gaccacgttg gctcccgatg    1500
gcacagcctc caacctcgga agggatatgc acgggggctg gacttcttct ggaaagcatc    1560
cggactgaca gatctttcga gcattggttc tcctattcct ataccgatgc tcgcaggagt    1620
atctcttttc gcccgatcag gaacgaccgg atttcgtagc caagcaactc tttccaccgt    1680
gctgaagtat tggtgtgctc ctatcagctc actatcaacg tgtcgatgtc ctggcgttcc    1740
ggcatgacct accacgatcc caactagcct ccccggctta tttgaacgca tcgctaccgg    1800
ccaatttcag catagtgcct cgtacaatta cccattcaag tacaagaaag ccggcggtgt    1860
actgtcttca gcgtgcacaa tctgttcaat tcggatccca cctacggcta tggg          1914
```

(2) INFORMATION FOR SEQ ID NO:62

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 355 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...355

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:62

cggaacgatc cgatcgaaac cccttttttg cgatagagac aaataagacc aggtatgaaa   60
cgattgatta tcgcaggcgt tttggcatgc gccttgtgcc ggtatatgga cagagagtac   120
tgagcgtgaa cgaatgccgg cgccttgcct cgaacacaac agagacttgg ccataagccg   180
cgaaaagata aatgcgccac cagtactcgc aaagccgctt tcaccagcta cctgcccgag   240
ctctcgccac cggtacttac ctgcacaacc agaaggaagc tatcgctatt gagcacgagc   300
agaagcacaa gctccagaat ctcggtaccg accttgtcac agcatagggc agaat   355

(2) INFORMATION FOR SEQ ID NO:63

        (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 642 base pairs
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: double
             (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

       (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...642

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:63

cggctcgtgc aggacaatac atgcttgtct gtacgggcga tatggaatcc ttatggaaga   60
tgcctcatgg atagagttgg cttccataga agtagcaggc atacgagcac ccattcatcg   120
ttactggtgg cctccaaccc acagatcatc ttctcacagt tcatcgggcc aatcccgaga   180
cattgccgac tttcagatta caaatgaagg tggtgctact ttctccggga aaatcgaaat   240
agtggtataa aggctttctc ggaaactttc ttccaagcga aagaagaaca catggtctcg   300
cccaagggga aaccaaagta ttgtctccgg agctgactgc gaatcttctc tctatacaaa   360
tgccgaactc tttcccgatg gcacctatta catgtcatca gagagcaggg attttgggat   420
ccgatcgatt tgtttgggga cattactatc gtatccgtct cattacggat ctatcctctt   480
cggacatcgc ggtaaggatg tttctactat agtactttat cccaatcctg ctcacgactt   540
gtccatgtag ccattcctcc cacatatgcg ggcagcacac ttcgtttgtc gatattcaag   600
ggcgaatgca gctctccacg aagatcgaat ctgccgaatg cg   642

(2) INFORMATION FOR SEQ ID NO:64

        (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 307 base pairs

```
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...307

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:64

ctttgaaggt cccctctaga ggatccccgg gctgttcgct ttcttttggt cgggccgatt        60
tgaggactga ataggaaata aatgtttat aagacaaaca ataagatgca gatgagaaca        120
tttcgtgtcg ttgcgatcgt ttcgctgtct tttcttcttg gatgacgctt acggcgcaaa       180
agaatagttg gtgggtggtg cccatgccgg acgcgagtac ttcaacaaca caagtgagga       240
tatgagaaag gatggaatac cggagtagtc ctgcgctact atttctccga tcgatatatt       300
ctttggc                                                                  307


(2) INFORMATION FOR SEQ ID NO:65

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 654 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...654

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:65

cggcagaaat aggaaaaaag gaacggatgc atgtcagact ccggttggag agcttaagct        60
cggagtccgg acctacatgc tggcagaacg tcttttttccg ataagctccc cactcaaatg       120
cgccacttgg gtgctatcga tattatgcag ccgctaacgg ccggctggac gatctgcgcc        180
tgaaaactcg tgtggaacgg atgccggagc tttgaccata cagggcagca tcggcctcga        240
ttctcctggc gacttgccga tgtagatgct catgcgacta ccgaaagact ggaatcaagc       300
tcatggcaga ccggcacgat tggcctgaac atgtggcgtt cgactgaaga tgaaggcccg       360
actggctgcc ggcaatctcc tctcgggaag tgggagggac gcgtgtcgca cctgactttc       420
cgaggctata cctatgagga ctgacgatcg acttacaggc cgacaagggg cagtggtcag       480
gcatcctgaa atgaacgacc ccaatggcca tatccggcta tcctctgccg gagaggggcg       540
cctttctctt cgagttcttc ccggttcgaa tggaatctga cagcgcacaa cttcgtcccg       600
atcgactttt gcccgcttcg gactgccatc ggccgatctc ttctgatttc ttcc            654
```

(2) INFORMATION FOR SEQ ID NO:66

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 654 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...654

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:66

```
cgtattcaga gcgatatgct gctttctact gcccaaaagt ccaagaacac tggttcggca    60
actcctatat catgggtata atcaagaaca attatctgag tttggtgccc gtttcgagga   120
tctctataag cccctgcccg gacatgaccc gagatggggc gtggcgttcc tcacatgtat   180
gtgaagggaa gctatcttgg gcggagctga ctatgggaga cttctacgat cagttcggta   240
gcggttggta ttccgcacct atgaagagcg caacctcggt atagacaacg cggtcgcggc   300
ggacgtatag tactcactcc ttttgatgga gtgcgtgtca aggtattgca ggacagcagc   360
gtaactactt cgaccgcacg ggcaaggtat tcattccggc cgaggctacc tactgggttc   420
tgatctggag ctgaatgtag acgttggagc agtgccatgc gcgacaatga ctatcatttg   480
gctatcgggg atcgttcgtt tccaaacacg aagcagacga agatatattt gtgggtgtag   540
cgaagatcgc aagcgactca acctgccgct caatgtcccg attatgggct gcgcaccaac   600
tttcaaaaag gaggtctcgc cctctacgca gagtatgata caaatacaac gatc          654
```

(2) INFORMATION FOR SEQ ID NO:67

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1812 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1812

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:67

```
gcgactttcg gctcgtattt ttccctgatc gactgaatga ctctgcgcct gatgccgttt    60
ttcttctatt tgtatcggtt gttcttgcca taggcatgca ttgaacttta atcattattt   120
```

```
tcgcaccgga ctttgattac agtgtaatat gaaaagaata gtattgattc gccacggcga       180
aagcttgtgg aacaagaaaa tcgctttacg ggatggacag atgtggattt gtccgaaaaa       240
ggtatgaaga agccaagaaa gccggcgagc tcatgaagaa agaaggcttt cagttaccaa       300
agcctatact tcctatctca aacgtgccgt caagaccctg aacgtgtcct cgatgtaatg       360
gacttggatt ggataccggt ggagaagacc tgcgtctgaa cgagaagcac tacggcatgc       420
tgcaaggcct caacaaggcc ggactgccga gaagtacgga gacgaacagg tactcatctg       480
gcgtcgcagc acgacgtccc ccccacgcct atggagaaag aggatccgcg ctctccgtta       540
tggatccgcg ctacaaaggt gtgtgcgaga aagacctgcc actgacagag ctctntgcga       600
cacggtaaat cgtatcctcc cctattggaa cgagacctat tcccccacgc tcaaggagca       660
tgacgaggta ttggtagcag ctcacgcaac agtctgcgtg gtatcatcaa ggtgctgaaa       720
aacatttcgg acgaaacatc atcagcctga acctcccgac agccgtgcct tacgtttttg       780
aattgacgac aatctccgtc tggtgaagga ctatttcctc ggcgatccag aaggatcaaa       840
aagctgatgg aggcagtagc caatcagggc aagaagaaat aacccccatc gccggccctt       900
tcctattctg cttttcgaca gaaggcaagg aaaaaaacaa gaagagagcg ttgcacgacc       960
gttagcggtg caacgctctc tttcatttca tctttttttg ctcggttgcc gcagatgtta      1020
tttgctccga ggtctttctc ctacaagacc ttgtcgtaca catgcatcag ggatcgggta      1080
cggcttcggg tgagaaacgc tctatatagg tacgcccgtc ggctatctct tctcgcggag      1140
agagctgtcg gagaggatgc tgtccagcat ggatgcatca tttccgcatc gtcggggtcg      1200
gtgtacaggg acgaagggcc tccggttctt ccagacacga acccgtggcc gcaacgaccg      1260
gcacgcccga agccaggctt cgacaatcgg gataccgaat ccctcgaagc gcgaaggata      1320
gacaatacct ctgctccgcg atagatgccc ggcaggaaag caaatgggac atgtgcagca      1380
tgacgagccg gtctgccaca cctgatcgct ctgcacactg cgcacctccg cacagtatgg      1440
cgtacgcttc cctacggcga cgagccgaat tgtcggtcac ggcaatgtgc caaagcctcc      1500
acggccagtc ggaggttctc ctcgtctcga tgcttcccac atagagcagg taacgctcag      1560
gcaaagcaat cgctccctcg ctctcgactc atcctcctcg gtagcctgtc cgaaggcggc      1620
gaacaaccct gatagacgac atcgatccga tcggcaggca cgtggaaaac tccatcacat      1680
cgcgcttggt ctgctcgctt atcgctatca ccctgcggca caacgggcag catggccgta      1740
tttgagccga tacagcagcc tgtcacaggc ttataatagt gcggatagcg aatgaagatc      1800
aagtcgtgga tc                                                          1812
```

(2) INFORMATION FOR SEQ ID NO:68

     (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 672 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...672

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:68

```
cgatttctgg agggctatca tccgatccag acgggatagc tttacctctc gggcacatcg        60
tccgcgaggt ggcgagcagc ataagtaccc ggccgttcga atacttgaac atgaaggcag       120
agtcgtaacg cacctcttcc atcaggcgag agtggcttcg aagtcttcct ccgtctccga       180
atggaagcca cagaagggtc gctgctgatg gcgcagtccg gtatggcccg gcggatagct       240
gctacctgtc gagataccac cggcgcgtat agccgcgctt catgacgcgg agcacttgtc       300
gcttccgctc tgtgccggca ggtgtatatg attgcagata ttgggtatcg tgccatgacg       360
gcgatggcct cgtcatccat atccttgggg tgggagaggt gaagcgtatg cgcatgtcgg       420
gcacagcttc ggccactgct ggagcagatc ggggaagcgg atgatccgcc cgttttgttc       480
```

```
gtatcggtag agtttacatt ctgccccagc agcgttacct cgcggaaatt cttggcttta    540
gatcccgcac ttcgttgagg atgctttcta tttcgcggct tctttctcgc ctcgtgtgta    600
gggtacgatg cagtagctgc agaagttgtt gcacccagca tgatggagac gaatccgttg    660
atatgtacgc ca                                                        672
```

(2) INFORMATION FOR SEQ ID NO:69

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1412 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1412

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:69

```
tttcgtagcc atgcacttag tgcggacgaa tgagagagag atcttcttgt ccgtgtaata    60
gatcccgtt ctatactgag agccgacatc gttccccttc tattgaggat tgtaggatct    120
atggtcttga agaaaagatc gagcagcgag agagcgatag ctcactcgga tcatattcga    180
ctcttaccgt ctcggcaatc ctgtggtttg ggaacagacc tcttcatacg aaggatcctc    240
gacatgccgt tggcataccc gacttcggta gccacgacac cacgcacttg tttgagaaat    300
gctcggtacc ccagaagcac ccaccggcaa agtatattgt cttgtctcgg gaatactgtc    360
attatgcttt gccgaagaag agcaactacc ggactaagag aaaaactaaa agaagccata    420
ctgataagaa taagagaaag aacttcataa caaatcggat tctcttttca tgagaatggg    480
gaagagacag ctcgaagtag tggcaggtcc tattcatgat gatagggctc atggttgaga    540
tagtcatggc acgatacacc tgttcggtga agaagaggcg gatcatctat gagagaaagt    600
cattcggctg agcgatattc tatcggttac agcctccgca ctgcagggct aaatccatat    660
gggcctccta tgacaaagac cattcgcggg tgccgatcag cattttcttc tgcaaaaagg    720
ctgaaaactc catgcggaat actctctgcc tcgctcatcg agcaatacgg tgctgtccga    780
cggcgaagac gagcgagtat ctcccgacct tcggcatcct tttgctgttc ggagaaagct    840
tgctacccag acggacatcg ggtattacct ccacttcgaa agaacataat ggctcaaccg    900
acgaatgtat tcctccgttg cctgaaccat tgtttgctgt cggtcttgcc tacaacgagc    960
agtacgatct tcatcagaaa gcagatcatc ccccgcatcg gcgttggaag cccaacccgt    1020
tgccggctgg acggcatgct cggttgttgc gttggaaaag tcggagcacc ggcggcagca    1080
tttcctgtgg caactgctgc tgaccttgct ggcccgatat atccgcgtcc atgcgccaag    1140
ccttcacatc ggtgtaccaa cggccgttga actcacgctt tcaatatcga cccagaccgt    1200
aacctgatcg cctacttgat aggaagatca atacgatctc cccacacgct gaagtgtatt    1260
ttgcgagggt attgtcgagc gtttccagta tgtactcttg tttttccat tcctttccgg    1320
aagcttgccg actcccgaat tgagtggcag tatctgaata agctgccctt gatctgaata    1380
tccatatttg ttttgttcta acatagttat cg                                  1412
```

(2) INFORMATION FOR SEQ ID NO:70

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 612 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

       (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...612

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:70

cccggtggag aaaatagaga gaaagctgcc atcagctgga cggacgaaag atgaagttag   60
tcaccgaagg agaagaacag atcttcaagc tcatcaggaa aagtaatccc accacccccc   120
actatctctt ccgttcggaa tggaagcgat aggaaaagag gatatgctcc atgcaccgag   180
tgccggcata tcctctttct ttttcagcta ttgctgctga tgaaacagcg tcccccgtca   240
gtctacctgc gagagccatc gctgataacg acattgtaca ccttgggttc gcggcgaatt   300
ggttccttgg aatctctnct nggcattctc gacaaagaga tcgacagttc tttcttgacg   360
aggttgatcg tacaaccgcc aaatccgcca ccatgacgcg cgaaccggtc acgccacaat   420
cccgtgctat gccgttgagg agtcgagctc ttcgcagctc acctcataga gacgactcat   480
accatcgtgc tttcgtatat tttctgtcct acggtttcgt agtcgtcgcg ctccagtgct   540
cgcacacatc gagcactcgc tgcacttctt cgacgacata ctcggcacca tataatcctc   600
ggcagagact tc   612

(2) INFORMATION FOR SEQ ID NO:71

         (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 1498 base pairs
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: double
             (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

       (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...1498

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:71

cgtgatacgt gaagcgatgc cttctttgtt tccggctccg ttaacgatat agtattgtcc   60
ttatcaaccg ttactttctc agctgtaccg agcatatcat cgtagcattt tcgagcttca   120
gaccggtctc ttcgctgata accgttcgcc cgtcaggata gcaatgtctt cgagcatagc   180
cttgcgacga tcgccgatcc gggagccttc actgcacaga tcttgaggct gccgcgcaga   240
cggttacaac caaggtggcg agtgcttcgc tgtcgatgtc ttctgcaatg atgagagggg   300
cttgcccgtc tgaaccgttt gttcgaggat cgggagcatc tcttcaggac ggatattttc   360
ttgtcgtaga tgaggatgaa aggattttcc attgcacctc catcttatcc gtgttcgtta   420
cgaagtaggg agagatgtag cgcggtcgaa ctgcatacct tccaccactt ctaccgtagt   480
gtcggttccc tggcttcttc taccgtgata acgccttctt tcttcacctt gcgcatggct   540
cggcaatgag gctaccgatg ttttcgtctc cgttggcaga gatcttggta cgtgctcgat   600

```
cttctggaag tcgtcgccca cttccttagc catacctcaa tgtgagttac cacagccttt      660
acagccttgt cgataccacg cttcaatcca tcggattggc tcctgccgta acgttcttca      720
gacccacgcc gataagctct gggcgaggat cgtagccgta gtcgtaccgt caccggcatc      780
gtcatggtct tggaggctac ttctttcacc aactgggcac ccatgttctc gaagggcact      840
ccaattctat ctctttcgct acgctcacac cgtccttggt aagtgcggag ctccgtacgt      900
cttgctaagg ataacattac gacctttcgg ccgagggtaa ctttaacggc atttgccagt      960
gcatctacgc ccttcttcag aggtcgcgag attccatatc gaatttgatt tcttttgcca     1020
tagtctttat atttattatt tatttttttt cttttttgga ggattattgt ctcttcctta     1080
ccactggggt ttcctgtttt tgaaggccaa cctgcagtgt taacttgtct gatttttttg     1140
ttttgcccat tagatgattg ccaagacatc gttttgcgca tgatgatata tttttcaccc     1200
tccagctcta tttcagtgcc ggcattttgc cgtagagtac ggtgtctcct gctttgagca     1260
ccatctcttc gtcttcgtgc cgttcccgac agcgattact tcacccttga gaggtttctc     1320
tttgccgaat ccggaataat gatcccgctc actgtttttt cttctgctgc agcggcttta     1380
caagtacgcg gtctgccaat ggtttgatgt tcattgttgc tggtttgtta ttgttagttg     1440
attgtttgcc tgtacaaatg ggaagcctct atgtagctcc gcaattttta tgtcaata       1498
```

(2) INFORMATION FOR SEQ ID NO:72

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 733 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...733

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:72

```
agtcgatcag accctcgcga tcgaaagcgc gcaattcttc cgcggcagcg tacgtcccaa       60
gcccngtaag tctgcaataa tcggcccacc ttgagcagct atggccatcg agatggcgca      120
aggccaaggc cagccgctct tcgcgagcaa attgggccga cggggacggg cgtaccgtag      180
ttcgcaccag atgaaccgag tacgagcctc gagaatcaat gccttgtcgg ggcggaaatt      240
gacactccta tcgtcacgct ggcggcatta cggcgtgtgc cgccttcggc ctcccgggtt      300
ctacgccttt gtgcaaggtg agcgaagcgg agaaagagcc gattcctcta tcttcaccgt      360
atatcccgaa gccacgccgt gggctatcgt ccagccaagg ccgtaaccaa ccctttgact      420
tcacccgggg agaatgtcga tgggaggaaa tcagatcggc tatctcgtcc agccccatcg      480
tgcctcggct atcattttcg gatacatcgt ccgcttgccc gtgccttgca tatcgggcat      540
tctctcatca caaacttggc catttcttct gtacagctat atcggtttct catcgccggt      600
cgattgtttt cttccgggcc gggaaaattt ttcccgaaac cgacaaaaat aaattttccg      660
gccggaaaat ctctgtccga anccttggat atataaatna aatctttgga tatatgttcc      720
aaaactttgt tta                                                         733
```

(2) INFORMATION FOR SEQ ID NO:73

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 733 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

```
(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
     (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
     (A) NAME/KEY: misc_feature
     (B) LOCATION 1...733

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:73

cggcattatt ttttttctga actatcattt tcttactatg ctgtatgctt atcgtatggc       60
tgcattttgc tgaggccata cgctaaaaac atttcaaagt atgtatttgt ttggataagc      120
ttttccctat catatattat cgctgctgtc taacctctat cattgagtat cgtatcatcc      180
gccagcaatt cggttaaagt tcccgacggt attctggtgg tagaaacttc ttgtcaggcg      240
gatagtgggg taagcctgaa cgtacaagaa aattatcatt tgtgggacca aaaacgtggc      300
gcggcaattt tttgcttttg gttcgggaaa aaataatttc tcgaccaaaa cgaaaaaaaa      360
ctcgcgcgta aattttcaaa aatacgaacc atatctcgac actttgggtt cgtaaaatct      420
ttttggccaa aatctttcgg aaaaacaagg taagcctcat catctttctt gttgtggaaa      480
tccgtgtcgg atggagtttt acaccggttt tcctgtcggc ctcttccatc aataccgatg      540
aagcaattcg cagggtctgc aagtttgaac cggatacttt atttttgtct cattacgaaa      600
ctattttcgg acagcgatat gagccaaaag cctacaacga tcggaaaatc atcctcatta      660
ccggcgggca cgttcgggca aaagtcctat gctgagcaga tggcactagc gcttgccgtc      720
atcctatcta cct                                                         733


(2) INFORMATION FOR SEQ ID NO:74

     (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 3401 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...3401

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:74

ttcataggta taaacgaaga cagcacgacc tcctttcgtg cccatcgtag gtacacgata       60
tgttgcgctc catgcttccg cctcataagt cctttatgta caatactcca aggattttac      120
cgattggctc ccttattact ggcaaggtac tctcagacta cgcgatatac gtacaggata      180
gatctaagcc ctggaacgat gtcgtacgga tggctnattc gnccccgacgc catgaagaag      240
atacgaaggc tgaaagagac ggactccgct gtacgtcggc cacggtggac gaccgctgcg      300
cctctgccgt atatccatgt tccgacagga agcatangga tttgcagcgg agacattgca      360
gcggctggcg gaagtcgcca tcgaaaggca tgaggtgaaa tagtcggttg cgaagatagc      420
gaagggcgtc tactggctgc ctcttcctcg cccacgatca taacacggcc tacacgattg      480
```

```
cttccggcca attcgtgaag gacaggggcg caatgccgga gcttttgtcc tgtatgaggc    540
atttggaggg cttgtgagat ggaaggcatt catacatttg acttcgaagt tccatgttgg    600
aggggataga gggattcttc cgctcgttcg gaggtatcaa acaccttatt tccgactgtc    660
caaaggtcgg attggcttat atggccacta agacgtaaat ggcgagcctt tcatgatacc    720
ggtcagcaaa aacagtatga atactgaagt aatccactac atcattcgct ttctgatcgg    780
agataaagcg gaaacgatca gctcctcagt cgcatcggtt atacctcgaa gcaagcgaga    840
tgtcccgata cagcattgtc atccgtgctt caaacttctt cgttcggata tttacgtacc    900
gataaggctt ttcccttgtt accgctgaaa gatgggaggg cgtacctctc cttttttggag    960
agccgaccga agagctgttg aagagagcga cacactggtg ctgaatgccg acattgtcgc   1020
ctctacatat tctgatctcc cgctacgaag aggatgtacc ggcgtaaact tcgagataac   1080
acggacgatt tccgggaaga gagtccttgc ctttcaaagc aggattttac agcgtcctgt   1140
agtagatgaa tacggggcca ttctgcgcac caaaatcgtc agatgggctg gccggtaaaa   1200
gacccagtcc cccatttctc catgggaatc tgacgcatga cgtagacgaa ccgttcgagt   1260
acagaggatg gagagttttg cccgagcatt gatcaaagga acgcaaatct cccttcaagg   1320
cttccgtctg gcttatgcca atccggcaag tgatcgtttc ttcacttttc ccgtttttgtg   1380
gattgggata aaatattgcg cagcaaaatg ccggattgct gcggattatc ttcttcttca   1440
aagcacccgg aaaggcccca caggatgcac gaactattcg ctgagaaaac cgctctatca   1500
atcgctccga tctttggtta aaacaatgga atagtgatag ggcttcacag caactactct   1560
gccggtctaa cccagaactg atcggaaagc agcgcaagcg acttatgagc gataccgtat   1620
ggcagtcgac tgcaacaggc atcactacct tgcagctcgt gagccgagga catgcaagcc   1680
ctgatctcgg caggtatcag acacgattat accatgggta tgccgatgtt gcaggtttcc   1740
gccttggtac atcccgtccc gttccttcat tatgccttcc acaagacggc tgaccgagct   1800
gatcctgcac ccattacact gatggattgt acgctgcaca ggcaagagta tatgggcctg   1860
gacgaagcta cggccataga agttggtgca aggaaactgc tgatgcatac ttcatccacg   1920
gaggagaagc cacactcctt tggcacaacg aatatctctc cgcnacattc atccctggca   1980
tgcccgtttg tatcgagaag tactgaggcg atagaaacca tggaggaaaa acaagaggag   2040
gaatctttcg actacgaacg gccatcgacc aatgaaacgg gtactcatct tcgccgatat   2100
cttccctcgg cttttgctcc gagagctgcc tatctgacca aatatctgcc tcgattggtt   2160
gggaaccttt tgtaataacg gaaaaaatgc cgactccggc atcccgtcgc acggcgatgt   2220
gtttggtgga ttttgcagtg atattccggt aacgctatcg atctctcttc ggcttcgttt   2280
ctgtctcaag cgattcgttc agccgtctgt tcggcgaatt gtttttggggag cagaaagaag   2340
agcgattcta caagaagcgg cgaaagcttt tcccagtgtc aaattcgatg ctgtactttg   2400
tttacctatc gcaagtttcc ccttgctacg gcttgccgct atgcacaggc catcgattgc   2460
cctgggtggc ggattgccgc gatgtgatcg aacagtacac aactacgatt ttcttcctcg   2520
tggcaagcga ctgccaagtc tgctgatgag tggcttcgac accgctatat ttctctccga   2580
aaccattatc tccacaagct gatcgtgtag tttcggtatc accctggcac tgcaatctgc   2640
tcgcagagtt aatcctcgta cagaattgat ctacaatgga tatgatcccg agctttttct   2700
cgaggatcgc ttccttgtgg caaattcatc ctctcctata caggcgattg ctgactccgg   2760
aaatgcacga tcctaccctt ttgttcgaag cttggcttct gaagctcttc aggaggtgcg   2820
caaagagaga cgaatagagc tgactggtat gtggacgaat actcccgctc catcctgcaa   2880
ccattcattc gcagtatgct ctgaaggata tgtgccgctt tttcccgatg gttccggctg   2940
tcaggtaccc gaaattctcc gccatagcag tgtcctgctc caactgggca cacagagaag   3000
cccggaggcc cccatggtat agtatcgacc aagctattga gtcactggcc atggaaaaac   3060
ccatcctgat ggtaaggagc gatgaagtat cgtggcagat attatatcgg aggccgaggc   3120
aggattggct gcacagcgac agaagaggta gccacattcc tgagtgatca atacactcgc   3180
tggaagcaga aggggatact tctcttcgga acccgaacag gaattttatc tccattttttc   3240
gcgtgaagag gaagccaaac aatatgctcg tctactggaa tcgtcgtcgc taactaaatt   3300
cagcatcgta tcatgaagta ctgtgatttt acccgttgcc tctcccttcg gagcctaata   3360
cgacagtcat tgccggtcct tcagtgcaga aagtgaggag c                       3401
```

(2) INFORMATION FOR SEQ ID NO:75

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 784 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...784

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:75

```
ctgcgccaaa agctttacgg ccaataagcg tcttttcggc cgcgacgagc gtataagcaa      60
acgagaggag agataaaccc gagaagcata atggctgcac agcctgcttt gcttcgggtt     120
tgtcacccct ctcgctttat ctatcgcgtt tcttcggatc agtttgcggt ccggcttacc     180
aactccctgt acatccctta tacatcggca gatccacacg aagagcctcg gcctcacgca     240
cgacaagccg gtcagcgtct ccacttccgt ggatccgccc tgcaagaaat cgcttgcata     300
gaagaagtac tttcgggagg catcttccgc tgtttgtcca gtactgttgg actacatcat     360
cggggacttg cccgtatttg gcgcggaaaa gccggccacc tcttccaata aagacagcag     420
ctcgggttcg tgttcggtca aatcgagccg atgggtttgt cgaagtaggc cgtagcggta     480
gccgttacgg gatcatcatg aatttcttca taatgtacca atcgatatcg gtcggattaa     540
tgcacgaata cccgcagcag taagcagttc ggcaaggcgc acctcatctc cgtctgctcg     600
ggaagtcccg aaccgaaata gaaaagttcg cgatcagctc cagcgtgatt aagccggggg     660
cactcttgcg agcagaaata tagacaatcc tttccatacg accgtatcgg gcagataggt     720
acgcatgcgt ccgcatgtc tgcaccgttg agcaagggca ggatcttcgt gttctgcccg     780
atca                                                                 784
```


(2) INFORMATION FOR SEQ ID NO:76

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1584 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1584

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:76

```
gtccataccg ctaataggtc tcaaagcgat gtcacataga tgtcaattaa ccttcatatt      60
taagatgatc gctgtaaaat caaggtttta cagcgattct tttttatccc ccttgttctt     120
tgaccgctta tctctatgtt ttgacagcat cattcggtca ttttccgaca caattactgc     180
tataactgca gaccagtctc aaaagtgtag tagtgaccgg atgatgactc cctgtttaaa     240
agcatgattc ccctctattt caatatatca tgtagatttt cggcatattg ctacgaaaag     300
aacgagtaat gccccctttgt agatcccca agagaatccc ccccgaatct cgcccaagct     360
ctatcgcaaa atgactcccc gccagagggc ggtttagcgg ctgtcaaccg aaagtcgtct     420
taaagagtaa ggtgtgtaaa ccataatgga ctttagagaa atctctgtaa ttttaatctc     480
gaaattaaca tctccgagtg tcaactcttt tcagtacacg tcactccaaa attttcctat     540
gtacgctccg aaaaacgtgg ttcgagaaaa ttttcatttt ggttcgggag taaaaaattc     600
ccaaaccaaa acgaaaaaat tccggttcca gtttttttaaa aacacaaacc aaaatttcga     660
```

```
gaattacggt tcgtaaaata cgatccgcaa atgagatgaa acagtaaaac atgtcttttt    720
atctgctttc ggaacgaaac gacaaatgga gacaagataa aaagaaacca tccggagagc    780
tttccccggc ctctcggcat agcccccta ctccgttttt aatatatact accttaggga    840
ttgaccctac aggattttc tcgctcgaga aaatatagtc gctaccatat tatatactat    900
ttttgcggag aaattggggt gttttggcct ttgggaaaca atgacaggcc accgatcccc    960
tgaaacggat ccgtcgatga caaaaccacc gccggccgga agagggtgtc agtctcccat   1020
tctttctcta gatatagcaa taagaatgtc acaaaagaac aagaagcggt cttctgcctt   1080
ttccattcaa ggttttttggc cattatgagt attgccgttg tcctcttctt ctggggacta   1140
tcggcatcat tgagtttgtc ggcagaggaa taggcattcc gtgagagaag acctctcctt   1200
caatctgctc ttatcctccg acatgatgaa acgcaggcac aagagctaca gcgacagata   1260
gcggccacac ccttgtcaaa gatgtcagct atatctctgc cgatcaagcc ctcgaagaga   1320
tgaaaaagaa ttgggcgaag acgatccggc caagatgctc ggctataatc cctgcaagcg   1380
gaaatgtgcg ttcacctcaa agcccaatac acccatccgg aagtctgaaa accatagact   1440
ctgccatccg cacatggaat ggagtggaca tctggaatac agggcggata tgttcgacat   1500
agtacaccgc aatacacgcg tatcggtctc gttctgctcg ctctatcagc cttgctcctt   1560
ctgatcaact acatacagat caac                                          1584
```

(2) INFORMATION FOR SEQ ID NO:77

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 627 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...627

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:77

```
tggattccgg cagatttctc cgtccaactt tagaagaatg agttggatat ttggggtaag    60
aggtgtagat ggattgttgg aaacataatt tgtagggaat taattgctcc ttgtataacc   120
aaatcaatgg gatcattcgc atttccattt tgccaatgaa gtctgcagta gttacatttt   180
taacaggata ctgcttcgtc gcttaacccg tcagacatca atatgatatg cttatccaca   240
gcagtgaagt ggccataatg tttctcgcca ttttaagccc ccctgggta tgtgtcccca   300
aataggagtc aaagcccgga tttttgaca gagaaagca gtgctttggt aaaatcagat   360
aagcgatgag gctcatggtc ataactcaca aggcgatncg caccccttct gtagccgtcc   420
ccttaggcaa catttttttc aaaaacgctg tcccgatgca atggcagact ttaatctggc   480
aatgttttgc ctcccattga cgaagactgg tcgataacca tcaccacatc gacaggtacg   540
ttaccgcttt agtagtgatt tttagcgtca catcccaagc attgggattt caggatccat   600
tggattggca accggtaccg catactt                                        627
```

(2) INFORMATION FOR SEQ ID NO:78

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 611 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular
```

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...611

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:78

```
ctgctctaat aaagaaggtg atataatagc tcttgttact tcatatacag atttatgagt      60
ggaacccttg cgatcagaaa agcagatgaa ggcaaatgca acttgttggc ggagatatac     120
agaatgcgat cgttcaaaat atatgcagat ggacgacaac aagattgctt gtgaagtctt     180
cgggactcct aacggataga tggtcggaca agggtttgtg tttctgacgc atctgtcttt     240
gatttgagtg gtatgaagat gaaatatacg gaggcctgat atttgacact ttctctatag     300
cccttgggac aaacttcttt atgcgaaatt tggtgggatt atgtcaggag taaagagtct     360
tttataacct ctttcatttc tccgacagtt gtcaaggagt ggatgtctat actttggccc     420
gggaagataa ggatcgaaag taaactccgg tgtctgaggt gttgcttttc gacctggctg     480
gcaggatggt cttcggcaaa ccattgataa taaaatctat tcggacatag atactaacga     540
ctaaagcgaa agcggtattt acgtagtctc ggtgcggtct cttccggaag gtatcagtcc     600
taaggtgcag g                                                         611
```

(2) INFORMATION FOR SEQ ID NO:79

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 648 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...648

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:79

```
cgatggtttg ttattcatag aagagttgcc taagatctta caatatccgt agtggtgttc      60
tttttcctca tggtaatcaa tagtataaat ctaattgagg aatcgatgga ttggctacaa     120
gtctggtgct tctggggatg ttattttat accattcttt atctatgtca atatgtattt      180
atatgtaata atctgttgtc tgttattggt tgcttgggag cttttcttcg gatgaatctt     240
tatggacaac tgagaagcga acaaagattt tcatgggaga tacgggatct ttaatttagg     300
ccttcttttg agctttatgg ccttacgctt gcttaccccc attcaaatac tgctttacct     360
cttccatatg tagtagctcc gctacttatt cctggttcga tttattccat gtttttgtat     420
tgagaatttt atcaaagaaa atcctttaa acctgataag agtcatattc atcatagact     480
tatggctttg ggttgacgca gagacaaaca ctgttgtcat attactatac tctatcgcgt     540
ctctttgtta atatctttgg gtacccattt tttaatatca atgtgctgtc tgctggatat     600
cgtcatatgg atcacatcca atatgcttat agccaatttt tgcgcaaa              648
```

(2) INFORMATION FOR SEQ ID NO:80

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1764 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1764

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:80

```
cagcatcata ccgggacagt atgacatcga aagcctcatc gcatccttcg tataaaggct      60
gaccaattca tcatcagtca gcttgtggaa actgctcaag gagaatcctc tttatttatt     120
gttcagaagg tagatatgcg tcgatagcga ttcttttaaa tgagacttat tgcaaagaaa     180
aacatttttt ttcgacaaac aaacagaagc aactgcttat caacccgact aatgcagcgg     240
aagagcagcg atcgttcttt tccaagcgga gtgtcatcgt ggggctatcg cataatgttc     300
ggggccgaag aactgtatcg ggccggggta aacgtactcg gtgtcaacgc ccattcgcga     360
cgcatctcgc gcaatgctcg gtacggttca cctccatatc caccaatgct tttcgaatca     420
cgggcttcat ttttccgctc cacgctccat attcatcatc atcgtcatgg gcacgccgcc     480
ggcttcccat cggatacagg atctgccgta ttcttgatcg cagccatgta gcccgtcttc     540
ccgctgcgat caggatagaa gctgcacgtc cgagacagta gcagtagtgg catcgaagtt     600
ggagggcatg gcacagcgtc cttcgtagcc gaagaagggg taagcgtact gaaccgcccc     660
tgaaatcgtc cttcttccgc ccattcgcca gcttctgagc cgtcatgtct gccaagagct     720
tctcggtggc aatgacgaaa cctgcacatt gccgtgaggg tcgcgatcgg caatcaactg     780
tcgaccacat ccaccggcaa gctgtcgtac aggcgcgaat tctcgggact gagttgttct     840
tgatatactg tctctgtgcc gaacgtttga tgagcttgaa ttggcatcat tttgggagag     900
aaactcgttc agctccttga tcaacctctt ctggccggca ggaattcgat caacccctcc     960
ggaatcagta ccgtcccgaa ttcattcctg cctccgaccg acgcaccacg gtctcggcga    1020
tataggtcac acatcgtcca gatagtaatt gttggcctcc acctcttcgg atacgataag    1080
atattggggt gggtctggag ggcgcactcc agtgtaatat gagatgcgaa cgccccatca    1140
gcttgatgaa gtgccagtac ttccgggccg aattgcatcg cgctggatat taccgatcag    1200
ttcgctatag actttggcgg ccgtgcgaag ccgaaggagg tttctatctg tttgttttc     1260
aagtcgccgt cgatgtcttc ggacagccga tcacttgtat tccggcatcg atcgaggcat    1320
agtctcggcc aggatgcagg cgttggtgtt ggagtcgtcg ccaccgatga tgccaatgcc    1380
ttgatgtcca actctcgcaa tatctccagt ccggcttcga atgttcgggc ttgtccagct    1440
tggtacgtcc ggatccgatc atgtcgaagc ccccgtattg cggtattcat ctattacctc    1500
agcagtcagt tcgcgatact atgctcgatc aggccatccg gtcccataag aaatccgaag    1560
agccggcttc ggggttgagc agcttcatct catcgaacag accggctatc acattgttcc    1620
acccggagcc tgtccgcccg aaaggataac ccccacattc gtaggagata ctccgtccgc    1680
tctcctccag gtgcgaaaga aataagcggc aagcctatgt gcggggaaaa atagcagcaa    1740
tctcttcttt gtccgaaacc gggg                                         1764
```

(2) INFORMATION FOR SEQ ID NO:81

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 670 base pairs
        (B) TYPE: nucleic acid

```
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...670

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:81

cgctggaaac ctgaaggagg tgtgcccgag gtactggaga ttccggccgg gagcaagaca      60
aagcgaaaga aatgcatcag gctttggtgg aggctgcgcc gaaaacgatg agagcctgat     120
ggaaaaattc ttcgatcagg gaagtcttct gaagaggaga tgcgcgatgg tatccgtgcc     180
ggtctgatct cgcaggtatg taccccgtgt tctgtgtcag tgcggagaag gatatgtgtg     240
tgcgcgtaca ctggagttcc tcggcaacgt ggttcccggc gtgaacaaac tgccgcacct     300
gtggctgtga gcggagagga agtgaaaccc gatgcttcgg ctccctttgc atccatttct     360
tcaagactac gatagaaccg catattggtg aatatcatat ttcaaagtaa tgagcggtac     420
cctcaccgag ggagtagatc tctcaatgct gaccgaggct ccaaggagcg catcagtcag     480
atattcgtgc ggccggacag caacgcatca aggtggacca gatgtgtgcc cggcgatatg     540
gagctactgt gaagctcaaa gaggtacgcc gtggcaatac gctgaacgaa aaggcgtgga     600
gcatcgtttc gacttggtca aattcccgag cccaagtccg tcgtgccatc agggctgcca     660
acgaatccga                                                            670


(2) INFORMATION FOR SEQ ID NO:82

       (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 343 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...343

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:82

tgatcgccat attgtcccaa gagcataagg atatggagga gaaagtccga agaaacttca      60
ggaaatgata gcggatacgg atcatcgtct ggatatgcgg atcggcagac cgaccgaaag     120
atcaggatcg gcagaaagaa tgccggctgc cgaagtcggg tgtcatagcc gactggctgg     180
tacgggatat gatgcgtttc agcccgtggc gaaagacacg agtggcaagc ctctgaacaa     240
tagcaggcca acagcaccga ataccggatg ctacagcgcg ccctcgccct tttcgcggag     300
agaaagagcg tctgacaccg tatttccgcc agatgaatct gac                       343
```

(2) INFORMATION FOR SEQ ID NO:83

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 656 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...656

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:83

```
ccgaaccaat ggcttggcta tatgccggag gcgatcgtag aatcaacaag tggtggggga      60
ataccggcaa tgctgagaat aagccgatca acttcttcgc ctgacaactc gcggtggact     120
tgtatatgac gtgccgatta ttacgcagaa ggtgctattc cgggagggca gtacttacct     180
tttgccaaag gcttatggcg gataagccga gttatacggt ttataggaat cgtcattaca     240
tatatgtatc aagacgctgc cggataagat agaagtgaag tattctattt gcgatggaat     300
tttagtaccc aacgatactt atatgggcta tggctacaac gtggagtcga tgagcaaggc     360
aatgtcacca ttactaatac gatgcagaat tggatcccca tgttgtgaga ctcgttgcta     420
aaaatggtgc ttactttggc tccagcctac cgatacttcg gttgagtttg ctgagttagc     480
caacggtgct cgcaaacatt caaagtaaat aaagatgctg tggcggtcgg ttctgcttac     540
tggaggttta ttacaacccg gatccgaatg caacagggtc gttccggaaa agttttatca     600
agaaatagac agacttatga aaaagtattg gtatatgctc gttgctaacg agtgtt         656
```

(2) INFORMATION FOR SEQ ID NO:84

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 1128 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...1128

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:84

```
aaggtttcaa tttcgcacaa tgagagatcg ttttttgtg caaaggtgtg tttctccttc      60
tcgagatatg tcatctttaa ttccattatt tcgtcttaga accgaacaaa ggtagaattt     120
```

```
ttaaggagaa ggataaatga aaaaacctta aaaacatgaa agtaggagat aagtgtgaga      180
atgagtgcgc ctgatcttgt gatcggcgca ctcttttcgt tgtttggtcc tatggacagt      240
ctattgtatc cggatcgtat tcgggttaga gccctcctcc tcctgatccc tgatgccacc      300
accggtttga gaattgctat cgcctgcatt ggcagaagca cctccggaag cggcttgccg      360
tactcggcga acttcagatc cggagcgatc aggtacaatc ccgttcgcga gtgaccgtat      420
tgtaacgaca ctctgccctg aattgacccg aacggagttg aactgggagg ctttcacatc      480
ctctttcttc ccactcccga tcctttggcc tgtgcaatga dacggaaaca accgatgcct      540
cgagcttgat cttcttgccc gaagccaatt ccctgcgcat gacgatgcca aatcgcgcag      600
gataccgaat acatcgcccg ggctggctcc cgaaagtctg agatttgttc tgcgatgtgc      660
agggtggagg caatgctgcc gttgatactg tctgcggata ccacagcttc ttgcctgttg      720
ccttgtgggc aatacggatt gtcttctttt gaagaataac ataataattg aaagaattaa      780
tgattaataa tgcggacttt ttctgtccat taatttaata atagcaatcg agaatcgatt      840
cggcgccatc ctcttctctc tgtttgcact gcaaagataa ggtaaagaaa ctgatcgtcc      900
aaatgttttg cagaaaaaag ttttcaacaa caagggcgct ttacgcttta tatataaaac      960
ggcttccgta tttcttatac aaggcttcga agcactcttc cggctttcgt aaggggagct     1020
gaaatccggt attcggcgtt gtccgaatga tttatatata aagtattttc gattaataat     1080
aaatcgattt ttatttatat attaatcgtt ttcattttgg gggatccc                  1128
```

(2) INFORMATION FOR SEQ ID NO:85

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 1094 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...1094

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:85

```
cgggcctttg ctgttttctt cgctgagtac ggcacatgcc gatatgccgt ttggtcttcc       60
gtcatccata ttctttgggg tgtcttgcct ctggtggtgt tcctctattg gctgcttgga      120
tcattcgttt cacgagccct cggacactgc ccggcttctg cgcattcccc aaatggcttt      180
ttggctatgg gttacccgct ggctatcatc atggccaaaa cgacaggcta tgtgatggca      240
caaggtccga cagcatccgt ttggagctgc tgttggcgtt gggtggtctg cttacttgtt      300
gccttgcaat tcgggttggg cangtggcta agcaaacgat attgaaagag agcattacgg      360
ccggtcaggc tttgggacag aaaaacacgt cgttgccatt tggatgtcgc ttacctattt      420
gaatccgata gcttctatcg ccctgcaagc tatgtggtat ggcaaaattc gctcaattcc      480
atccaaatct gctatacgat aaacgaaaga ataaaaccga cagacaatga aactaacagc      540
cgatggttta cttccatcag tgaggatgag aagggcaaca tagtattctc aatggacgct      600
tggagcttga cgaattccga ctgagtggca agctgaaatc cgaatcgaaa tacgctggcc      660
ctacgaagcc gacgaacaag gtctgctaca gaatcggcag gcaaacggat cgaagagatc      720
gagctgctca tccgtaggct atggaaaagg acaagttggc catcatgaca ggcaactata      780
ccggggcgga acaaagtatt gggtctatta tgcccgtact gaacgagtat tcgcgaacgg      840
ctcaatgagg tgttggcccc ttacgaaaca ttaccgctgg agtagaatgc gaagtcgata      900
ccgactggga agagtacctc gatatgctct catgaaagac gaaaattcga tatagccatt      960
atgccatctc tctgtggcga gggagctatt ttttattggt caagcttcng aaccggatcg     1020
acgataggat gattgcgcgg atggtaggtc tcgatttcat gccggagtgt ttctctgtga     1080
tatgggtata gatc                                                        1094
```

(2) INFORMATION FOR SEQ ID NO:86

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 652 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

 (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: UNKNOWN

  (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

  (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...652

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:86

```
gctcaacaag agaagcaggt gtttcatttt ctgaaccttc cggctactga caggctttgg    60
ctgccggagg caaagctatc accatcgtag acgacaatcc ggactggctt ttgagaatcc   120
ggctctgctc ggatatgaat ccggtggcgc gcctttcttt cctatttata ttatatgagt   180
ggttcgcata tgggcatgcc tgttatgcct cgtccgtcgg agagcgtggc atgtggggtg   240
ttggctgcgt ttcctgaact acgggtctat gcaaggatac gatcagaatg cgatgccacc   300
ggctctttta gtgcttcgga tatagctgta caaggatttt acaccatgaa ctgagcaacc   360
acttccgcgg tggagtcagc ctaaaagcat tgattcttct atcgagacgt atagttcctt   420
tggccttggt gtggatgtcg gatcagttat tacgacgatg acaaaggata ttccgtttcc   480
gctctgttca gaacgtaggg gcgcaactga aaggctataa tgaagaacgg gaaccgctca   540
ttgggatttc cagctcggct tttcccgcag ttttatcaat gctccgttcg cttgcacatc   600
acgttgttca atctgaatcc gcactatttc aagcgtctgt accacgcgat ct            652
```

(2) INFORMATION FOR SEQ ID NO:87

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1402 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

 (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: UNKNOWN

  (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

  (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1402

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:87

```
cgacatttta tatatcgctg atagaacaag aaaactcaaa cctatgaatc agttcctgct    60
tctgaaaaca aaggtcaatc ccgtacagtg gaagacgacc gcagtacttc ggactttatc   120
```

```
tcaacctcgc  acgagagaat  ttgatagagt  cgaaagtcat  gttcgcatta  agttcgggaa      180
gaagaaattg  aatgaaagtc  gctcaagcaa  tctcttcttt  gtgatcacct  gctctccgtc      240
gatcgtggac  caaagtctat  ggccatagca  gacgctatct  gcctttcctc  cattttttcga      300
tccggatagt  cagatcgaaa  aagaccatga  tagcaagacc  ggttggatcc  cgattcggcc      360
caaaggctga  tcagagagct  ttattcttta  ctgatttcct  gcgcaatgac  ttctcgcaca      420
atcggcttga  tggcactaca  tcgagcatct  cgaagtcagc  cctgacatca  gctcctttat      480
taccgggaca  actccttggc  atgcgggaga  gcacaatcgc  ggtttgcaga  tttcttcaac      540
ccgacgactt  tgtcctggca  aagaacagga  aggaacaatt  gataagcgag  cggacggaaa      600
agaatgcctg  accgttagtg  gccttgcctt  tttcattgcc  tcttcctcga  tagggagcag      660
gcttccggta  tgctgagcag  gattcgggat  tcaaacgaac  cgatgagaat  tgggcacgag      720
ccgtgcacga  gacctctgcg  atctctgcat  ccgtcatcct  cacgacaggc  tcgaaagcag      780
caatcgaaag  aagctctctt  gctcgatatg  ctcaacgaac  tgaaccgttg  ccccgcatcc      840
tttacgatat  gctccccgaa  gaggagcggg  cgcaagttcc  tcctgcgctg  gacgaaaata      900
gcatgaacaa  cctctcggaa  aacagcctga  agaagagagt  cgattgcttt  gggacggctc      960
ttcggattgg  gcagaggcac  gaccaagagg  atccgccatc  aggatcgctt  ccctatctg     1020
atgcttcgtt  tatcgaggag  atggatctgc  tcaagggtat  acgctttcgt  gtcgatttgg     1080
tgaaatcgag  ctggattctt  actccaaaaa  ggtaggccgg  aatggtggta  cgatcgcacg     1140
ataacggatc  atgccttggc  attcggcaag  ctgtcaactt  ccagaatgaa  gaagaggtaa     1200
gtaggatgat  cagtggagag  gcgtctatcc  cgtacgcttc  tctctctttg  ctccccgcta     1260
tgccatatac  gacataagat  aggctattgc  catacatccg  accctgtata  tcctaagagt     1320
aagcagggag  taagagggcc  ttgagcaatc  ctcagtcgat  gggattatca  gttgcacaac     1380
cttcgtaagc  ttctcttgat  gg                                               1402
```

```
aacaaggatg  ctccatctgt  cattttttcca  ttcgttctga  ccgaataggt  gtagttgttg      60
atattctgat  ccaattcggg  atagagggga  atggtattcc  attggcatcc  tcgccggtct      120
gccatgaaag  gatgggcatc  acgtcatgag  ttcatcacgc  gtatattcgg  ctccgaacaa      180
aagttgcgaa  ggcatgggag  gaatttgtcc  aagtcgtagc  tgtactggat  accgcccata      240
tatgtttgcc  tttggtcacg  ccataattat  tgccgtattg  atcttgaggg  ataggtagcc      300
ttccgtacca  ccggggtggc  cattgacgtc  aatctctccg  atactccgta  atagctcttg      360
cgatttacga  tctgtccgga  agtataagcc  tgaagtggtg  tttatagttg  gaagagaaga      420
gatcgtattt  caagtttccg  caaatacgct  atggtcagtt  tgttcagcta  cacccactac      480
gtgaggaggc  aatcgatacg  atcgccacca  cggcggaatt  cactgatcgt  gtgaaactcc      540
ccgtcaattt  gctgtagtcg  ctcaagcgca  aataagaatg  cgctcccacg  agcgggcatc      600
tattttaccc  aattcggaat  aaccgtcatt  gttagcaccc  aatggttgcg  gtaacgagcc      660
tgcccgaata  ccatggcacc  ggcacgttgt  catcgctgac  gatggaggca  ttgaagttcg      720
tgttgttatc  cagctgctga  aaccggtaaa  gctcagagat  tcattgaatg  tgaaagaatt      780
gtgaaaggtt  ccttggtgat  gatattcacc  actccggcaa  tagcagaaga  acctacaagg      840
ccgatcctcc  accacgtact  acctccacac  gttcgatcat  atggcaggga  tctgctccag     :900
```

```
accgtaaaca ccggcaaggg cactcatgat ggacggctgt cgatgaggat ctgtgcataa    960
cgaccatcca gtccattgat cgaacttgat tgaaaccaca gttctgacag ttgttctcta   1020
cacgaactcc ggctggaatg acaagccttg agccaggtta gaagcattga cttgcgagag   1080
acttttttcgt tcaatacatt taccagagta ggagcaagac ggcgaaggtc agttcgcggt   1140
tggccgaaat cacgacttcg tccagattga tggcatctct tctgcttcga aattcacctc   1200
gatagtcttg tcctttttcta cgcggctacg cgctcctggc tcttatagcc catgccacgc   1260
ataatcaaag tgattcaccc cggacgcaag ttacgaagat agtagtgccc ggttgcatct   1320
gtaatgtacc aaaggt                                                   1336
```

(2) INFORMATION FOR SEQ ID NO:89

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 501 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...501

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:89

```
ttatgcctca aaaattttat attcaaaagt ttttctccca tttcaataag cttttgacat    60
tttcttctgt tgcaggctgt attttatgca ctccaaattt ttagcgatat caggagatag   120
ttttagcaat tctcttcctg tctgattatt ccaatgatta caagcttggg atatttggga   180
ttggcaacat tgtctgtgca agctttgcaa tattagacaa acgcaaactt caaatgggtc   240
aacaatctat ggaaatcatc tataacaaaa tttcctccct cttcaaaatt actataatga   300
gttgatttat tntcgtcgtt tcatctatat ttcttgctga caatattcaa aatgtatttc   360
ttcttttatg tcagataata tcttcaaaat agagaagtct tccctgttcc agtttgtccc   420
tctatgataa ctggcttctt ttacttgtta catcaattag aattttcgta gtagtttagn   480
ggttcgacat tgttaagtgc g                                             501
```

(2) INFORMATION FOR SEQ ID NO:90

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1527 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:

(A) NAME/KEY: misc_feature
          (B) LOCATION 1...1527

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:90

tccccgggaa tttacaacta cggctattca ccagggaaag cctgacagta ttttaagaag   60
gcacgttttg gaggagctat cgacctcaaa taccatatac acctacgata ggaatacgcg   120
gggcctatcg gatcatctac gatactgccc tattgtacct gtgcggaaag attacaacac   180
cgttgatgtt ggtatcatat ttcgtttttaa gcgagtagta tatgacagat atgatgattc   240
aaacgcacag ggagagatgg agatgcgcct gcaagaacaa gaagccgtat ttgtaagaag   300
cgcaccggag aagaaccagg catagctcca ggatcattac ctagtggatg tgcctaagcg   360
taagttcatc ggctttctta gtgatgactt agatcagact agcgggaggt cattgaaatc   420
tatcgcaaac gttggctcat aagcgactct tcaagcagat taagcagaac tttcccctga   480
aatacttctt gagatcgttg cacaatataa ccctctaccc cttcatattg atcaagacaa   540
tacaagcatt gatttgacga agaaaggagc gcttcatgca gtatctgcaa cctcaagtat   600
acacctctga tggaagcttg gggaaatttc tgtttaccgg tgcccatata cttgagattt   660
gacctttcct gaaaacacaa ggaatcgccc tgcagcaaaa gaattcaatg aaaatcccgt   720
gcaacagtct caaaaagaga agctgcctct ttcggaactg ttccgggagg cagcctcttg   780
tggatcattt caatttcaat agcaaatggt tctctggttt ttcagaagat cttagctttc   840
cgtccacaaa agtcgtgcaa atcgaataaa ccgccaaagg aaaaatatgt tgttcagcaa   900
gttcacccgt atccacatgt cgaaagcggt acagaaaggt taagaggact cttccgttat   960
agcctgaaac taacccctac atgacaaagg gagtagccca gccggctgat acttctgaga   1020
acaatgcaaa tcgcgctgaa caaagaagcg cgctccaaga tgaataccgt agacaaagcg   1080
gtatcattgc cgaaatagcc tcccagagtc tgacctaaat agccatcaca gcagaagcca   1140
gctgatagtg aaagtctaat ttagtggcta aaatgaggca gagaaattgt gttccgtgcc   1200
gtaatagcca aggcgacctc ctacataatg gcgcctttgc ctctggcaag accgctgatg   1260
ataccggttt cgagtctacg gtgggcataa atgcagccga tccgtgatga gaaccgatac   1320
ccaaccgacg ttgagcgaaa cgtcaccctt gcggatagca ctctgagcat tcttgagaat   1380
atgccggcca agatgatagc cagactaaaa attacttttt tatgttgttt tcgttttttg   1440
acgtttgatt gtctcttcta attttttgat tgtttatcct gattctgatt gtagtcagca   1500
aggctttcag ttcttcattt ctatcgt   1527

(2) INFORMATION FOR SEQ ID NO:91

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 386 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...386

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:91

aaaagagatc ggaagacagc gaaaagagat tgggaaacga tttatatacg aacgaattcg   60
atttatatat ttatcatttt cgatttatat ataaatcgtt tcatttaata tatagattgt   120
aaagtgtttt atatataaaa cgagaggaga aaaggcctct tcgaccgatg aaataaaaag   180
aggcacccac ccaagtcgcg accgaactcg ggcgagtgcc ttagtatctg acagaaatgt   240
cgggacttat tcgcgcttgt acatcacaaa ttcggcacaa gcgtcctcgc tcgacgatta   300
cttcatgtta gtcttcccag cgtacattgc gcatgtcgcc gctttggcca attcctgatg   360

gaaagcaaag cagcagtcca gatcct

(2) INFORMATION FOR SEQ ID NO:92

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 588 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...588

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:92

```
gctgtcgatg agtttcttga gtttgagctc gatttgatcg cagagggcag caattcggta    60
cgatcggcga actccacatc ttcttcgggg aagtccaatc caactccatc agccccgtaa   120
ggcgaagcaa ttcctcacgc agagcatcag ttcctcgcta tatccaccac gcagttgctt   180
catcgccatc tgatgcgtgc cttgctctcg ctggcgatga tatccgccac cggctcggca   240
ctactaggtc catacgccca ttgaggtagg cacggcgagt aaattcgccc cgnttgccag   300
accgaacagg cctgatttga tcaatgcctt cgagaatacc gtcaccgtat attatatgga   360
gccatggcag gcaatctcga ctggatgctc ggagtgaagg agtgcnggcc atggaaacac   420
gttaggataa cttcgtcaat ggttcgtccg gctccatgaa tttcgccata gaaggcggtg   480
cgaggcttgg ttccgctgaa gtcaatcggc ttggccacga tatagaaaaa gtgggctaag   540
agcggaaagc attccggacc ggacacacga attcaccgga ataccggc              588
```

(2) INFORMATION FOR SEQ ID NO:93

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 473 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...473

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:93

```
gtacaacggc tcgttcgaag ccaattatct ggtatcgaag tccggcgaca atacgtgccc      60
```

```
ggagactaca gcaagaccac cagtctgaat atccgatgac acacagtcag gatccgaagg      120
ccaatccttt gcaaacgttg tcggccatgt caattttgcc accggnagct atttccagaa      180
ttcgctgaat accaccatga tgtcaatgcc cgtactgcta cgacacgaag ttcggccgtg      240
agctatcgcg caagtttccg ggtactcctt tttcgattac gggtagcatg gatacagcca      300
gaacatgcgc gatacgacgg tgagccttac cttgccgaat cttcgattaa tatgtccacg      360
cgttatcctt tcaagcggaa gacccgtgta ggccggagcg atggtacgag aagttgagtg      420
tgggctattc cggtcagctt ccaatagtat cttgacaaan gagaaagatt tgc            473
```

(2) INFORMATION FOR SEQ ID NO:94

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 516 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...516

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:94

```
cgggctgtaa ctacaatctt tctcattgtt ctttacttat tgttttaag ttttgagtca      60
cggtatcacc ataatagcaa tcagtgctga gtttggcacc gtccttataa caatcggatt      120
cacttttttg ttgtgagttt aatcacaatc tgtcgagaag tttatcggca tgcttcgagt      180
atgcggcgag ccatagcccg tcgacatcca atgcttcgcc atagctgacc cctcgttcga      240
tgaatgacgc tctatttcct ttatcacatc cgatcctatg tgcatttctt ccagcgggtc      300
ttcagtccga gttcgcggaa gaattcctcc gtccgagcaa tagtgcatct atacgctcct      360
cctctgttcc ctcttttata tcccagattc gtcggcatat tggagcatct tctcccgctt      420
gtgatcgtgt cccaaggtgc gagagtaccc ggtagcacta tggccagcgt gtgtccgtgt      480
gtgagtccgg cagtgccgta tctcatgacc gatcat                                516
```

(2) INFORMATION FOR SEQ ID NO:95

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 889 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature

(B) LOCATION 1...889

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:95

```
cggcaactcc atccttatca aggtaaacca gattggtacg ctcacagagc cctgaatgcc      60
atcgagatgg cacaccgtca cggctttacc agcgttactc gcaccgctcc ggagagacag     120
aagacaccac tatcgcagac attgctgagc aaccaactcg ggacagatca agacgggatc     180
gctcagtcgt accgacgtat ggctaagtac aaccaactgc tccgcatcga agaggagtta     240
ggccctgcgc tgtatacggc tacaagaaag tgtaagcgac aaagtacaca caggtacatc     300
tttctgccga atacggaaaa ggggaaaaga tagtaccact gccaaaaaaa gaatgccccc     360
aaagttggaa acacaacttt gggggcattt atttgccgac ttatttagaa gcgaacaccg     420
agacccacaa agaagtcatg atacgcaaag aagtcttatc cggagcatcc ttcaacatat     480
taagcaatcc tgctcatatc caatttgtac gtaataacgg tcgtagctca aggcagcagc     540
aagcccaagc ccaagtcgaa acggttatat ccgttatcac caaaggcact acagaagccg     600
taacgcctgc aactttagtc ttaatcgttc cggcgaccca tatgcgaaat agggacctgc     660
ttccaatgaa atagccatgt tgtcagaaag ctaaatctca taccggcatt caccggtatt     720
tgcagataat gcaaggagtt gtcgtttcac ttagtgattc catcttagca cctctcatcg     780
tatagccaat ccgggggcga gatagaatcc atcattgcta agagcgaact cagagcagca     840
ccaacacgta agcctacgat catcttattg ttcacgctcg tgttgcgac                 889
```


(2) INFORMATION FOR SEQ ID NO:96

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 640 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...640

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:96

```
gactgccaag ggtccgctca gtaccgtgat acccataata tagaatcggc tcgagcagag      60
gtggtaggag gtctgcataa tcgtattgag catattggca gacccatgac atgccctaca     120
tagccgaata tggcgaagaa gagaatgtga agccgagggc ttcgaagaga tgacgcctga     180
acgtcagttt cttgtgtgag atcttgtctc catttataat gatgtatgcg gtggtttttg     240
gtgggaaaag acaaggccgg agcggagctt cgttcggtgc tccgctccgg tcttgccgtg     300
aggattatga gttggtgtag acgaccctgc ctcctttgac ggttgctcca cgaggttcat     360
accgaagtga taggagagga atttgtacga tggtattgga gtacgacgag gtcgcccttc     420
ttgcccggct cgatgctgcc gtcgtatcgg ctcttcctat ggctgcagcc ccgttgatcg     480
tgagggctgt atggcttctt cgacggtcat gcccatgtag agggtggcaa gggcaaacag     540
aggggacgg aagccgagaa gcaactgccc ggattgaggt cgctccccgt gcaacggcac     600
agccggcgtc gatcatctta cgggccggag cgtagtcgca                           640
```


(2) INFORMATION FOR SEQ ID NO:97

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 838 base pairs
            (B) TYPE: nucleic acid

```
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...838

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:97

acgctcgcta tgcagatcaa ccccatgctc tgcggttctt cgttcaagac aagggcgtac    60
agacactgct cgatgccgta tgtaagttcc tgcccagccg gcagatactc ccacagtgga   120
aggtacggat ccttctgact cgagtaagtg atagagcgca agacctctcc caacgagcct   180
ctctgtgctt tggcgttaag attgctaccg acccttacgt agggcgtctt tgcttcttcc   240
gcgtaattcg ggcgaattgc ctgccggttc atacgtttac aatgctcgtt ctgaaagaag   300
gagcgtatct ctcgtctctt ccagatgcac tctaacaagc agaccccaaa gaggtgatcg   360
gttgcggtga catcggtgcc ggtgtaggct tcaggatatt cgtacgggcg atacgctttg   420
cgatgagagt catcctatcg tctcgaatct atggacttcc ccgatccggt gatcggtatt   480
gccgtggagc gaagacgcag aaggacctcg atcgtctggg tgtaggtttg gccaagctgc   540
tgaagaagac cccacgttcc gcgttcagac gaacgaagat tccggccaac ggttatcagc   600
ggtatgggtg agcttcacct cgatattatc atagacctct gcgtcgtgag tttaaggtgg   660
aatgcaacca gggacgtcct caggttctta caaggaggct atcaacgatc ctgtggagct   720
tcgcgaagtg tacaaaagca gaccggtggt cgcggtaagt ttgccgacat tatctgtcgt   780
gtgggcctgc cgatgccgac ttcgaaaggc gaattgcagt tcgtggattg agggaagg    838


(2) INFORMATION FOR SEQ ID NO:98

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1088 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1088

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:98

gactctctcg ttttggacgt cgctctcgaa agaataccgc cgcggacatt tcccgggcgc    60
agagagtttc cccctgtttt cggatgcgga acgagccggg taggtacgct ctatgtcaga   120
catagtcgcc aggcggccgt agagcgagat tggagttcgt tgggccgcgt atggccgaga   180
tggtgcgaga agctcgtccc ttgctgccgg cagagacatc atcctctact gctggagagg   240
aggtagcgaa gcgagagtgt cgcttggctg ctatccgtag caggacttcg catcgtcgtc   300
```

```
tccgtggcgg atacaaagca taccgccggc atttccccga tatctgaagc tttacccgtg    360
gcgtttcatc gtcttaggcg gttatacggg ataggaaaaa cgcccatcct gaacgaactc    420
acccaaatgg gggaacaggt gtcgatctgg aaggattggc ccaccacaaa gggtctgcct    480
tcggtgcctt gggcaagagc agcagccgac caccgaacat ttcatgaatc tcttgcacgt    540
gctctctccg cttgtgatcc gaatcgtccg atatgggtgg aaagcgaggc aagactatcg    600
ggcgcgtatt tcttccggac gatttctaca aagtcatcgt caagtccttt tgatcgagct    660
gtctgtcccc cgtcccgtac gcatcgccat attgccaaag agtacggcgt gtacgatgca    720
gaggcactgg caaacctttc gagcatatcg ctcgccggat gggaggagcc gctacgacac    780
aagcataact gccctcaagg aaggacgtct ggaggaggcc gtatccttgg ctccgattac    840
tatgacaagg cctatgcaca ctcgctggct gaattcaggg aagctcctct gctcgactgg    900
cagtagaaac ggatacacct cacgaaacag catcaaacta ctggaactat ctcatataaa    960
agggttacaa tcatgaaagt gtggatactc gggggaaact ctgcccctc cctcttattt   1020
tgctcaagaa gccgttgacg gcactcccgt cggagaagaa atctccgtaa tgactgacat   1080
gaaacggc                                                           1088
```

(2) INFORMATION FOR SEQ ID NO:99

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 958 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...958

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:99

```
gccaataatt ataaaattca aacagcctaa acattcttaa tgcgatgaca ctagtaacaa    60
gcaatacaag agctnnggaa aaaattacag cgtaatcaaa tacatctcat tctgaaaaaa   120
agagaataat acggctgacc aaaataagaa aggctcaagt ggtaatacgg agaaaaccta   180
tttgcacgaa ttaagcgtag attgatagat aaaacagcaa caacaaaaca agaccaataa   240
acccagctca gcaagagcgt tcacaaactg attgtgtgag aaaactcgca tgccgtcttc   300
tgaaaattac gctcaacaac ttgagtatac ccctgtccca acaaaattca taaatattac   360
cctcactcca tccttctatc ccattcaccc aaaagaagta cgtccagatc cttttaaatc   420
cattccttct gcagaagcat tgtatgcaca ttgcgcccag ttatccttgc ctgaaactgc   480
tcgttggtat atagaaataa acaagagcaa caccaactaa gcctatcaaa aatgaaaatt   540
aaccaagtga tgaatagtaa ttttacgagg aagcattaga ataaccaggc aacaagaagc   600
atcaaccagc ctgtacggac ataggcctga aaaacagaat taatcctact acaatcagag   660
aagcattgaa acccttctga aatgactcct aaatttattc agtctaaatc cgtttgttag   720
aacgaggatt gatgcgcgaa gtangangaa tcccgcatga ggagctccaa aaattccaga   780
ataaaaactg cccccctcaat tccaaaagca tcagcagata aaaagtcttc cacggagata   840
caatccccac aagtactaaa agtgatgcaa gaagtacaaa ttggctaagg tataaaggaa   900
gaattcgagc cgatcaactc gattagagaa ttaaccaacc aaaaacgaaa aaagagag      958
```

(2) INFORMATION FOR SEQ ID NO:100

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 885 base pairs
        (B) TYPE: nucleic acid

```
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...885

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:100

ggtccgctga cattcggcta ttctaccacc tatatatatg attttgcacg gatagtaagc        60
gtgctctgat cggtacgctc tccacggact ggacgcgcgt cctttccgct ttgccactat       120
catggagtac aatatggaga cgggcaagcg gatacgctta tcactcgcga tccttccatc       180
gacgcaatcc agtataaccc gacggcaaac atctgatcgt aatgggttcg gcagatgctt       240
tcggcatata ggactgaacc tgaaatcggg agtcactccc aattcttacg acaacaattc       300
ttcctgttcg atctctccac acggaaagca acagccttga ccagaatttc aaccccagtg       360
tatcggcagg gagattcgac agaaaaaaca acactattac ttcagggctg aaaacggatc       420
gcgcaagcag ctctatcggt tggatctgaa aacccttgag atcagtcaga ttcagaccgg       480
agagggatgg agtacaatgg ttcggtgtgg cagctgataa tggtgctgtc tggtacagcg       540
ccagagtgcc aacaatgctg acagactcta tcggctcgat gggaccaagg aaaactcgta       600
tgggatctgt ccgccgagaa gttggccaat atcgattcac accggcacgc gactggaact       660
atacggctcc ggatggcaca gtcgtaaggg ttggtactac ctgcctccgc aattcgatcc       720
ttccaagaaa tatccatgct ggtctattac tatggaggaa ccagcccgat caataggaca       780
ctggaggaca ctactcgctg gcgatgtatg ctgctcaggg ctacgtagtc tatcgctcaa       840
tcccagcggt actaccggct atggacagga gtatgcagct cgcac                       885


(2) INFORMATION FOR SEQ ID NO:101

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 838 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...838

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:101

gcataatgat gagcagcaac gagaggctcg ctggccgaac gataggttcg atcttcggat        60
gaatctgaaa gaggacctcg caaatcctct tcaaagcgat tcaggtgatc cgcaacgatg       120
aataataaag aatagaaaat caaatacata gataaatgaa gaagacaatc ttccaacaac       180
tatttctgtc tgtttggccc ttacagtggc cttgccttgt tcggctcagt ctcctgaaac       240
```

```
gagtgtaagg agtttactct tgagcaactg atgcccggag gaaaagagtt ttatactttt        300
accccgaata cgtggtcggt ttgcaatgga tgggagacaa ttagtcttta tcgagggtga        360
tgatttagtt tttaataagg cgaatggcaa atggctcaga cgaccagatt ttctgctgcc        420
gatctcaatg cactcatgcc gagggatgca aatttcagac gactgatgct ttcccttcat        480
tccgcacact gatgccggac ggggactggt cgttctattt acccaaggag gattagtcga        540
ttcgatatgc ttgctcgaaa ggtgacttat cttttcgata ccaatgagag acggcttctt        600
tggatttttc tcctgtggga gaccgtgttg cctatgtaga aaccataacc tttacattgc        660
tcgtggaggt aaattgggag aaggtagtca cgagctatcg ctgtgactat cgatggaact        720
gagactctcg tatatgccag gccgtacacc agcgtgaatt cggtatcgaa aaaggtacat        780
tctgtctcca aaagggagct gccttgcttt ctatcgaatg gatcagagta tgggaagc          838
```

(2) INFORMATION FOR SEQ ID NO:102

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1046 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1046

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:102

```
gcttcggttt gctcggtctg tgcagagata agagagccgg ttcctgtatg cagaataggc         60
gcaatccgat attaaccgac atttcctgcc ttttgagaga aaacttctgc cacgatcatg        120
ttacgttttc acaaaagtgg cgatgaaggt gacaaaatag catgccgaac agcattcgaa        180
tgacttttgg tctaattctg ccccatcggc acggtggcac tgtatttgta gcctcttaca        240
agcaagattt acagcccgta aaaacggatt cggacgatgc ccaaaggagt attcggcgga        300
cccttcatac tttatactat aaacccttcc gactttatac ttaaaccctc cacccttttat       360
actataaacc cataccactt tatactataa accataccac tttatactat aaacccatac        420
cactttatac tataaagcct catactttat agtataaagc ctgcgagctt tatagtcgga        480
agtattaaag gatgattgtc gtgctacact tgtgcaagaa aaaggatcag aacggatagc        540
tactgcaatg tgccaagcga aattggaaga aaggtttggg cgtgtgatgc ccatttgtaa        600
cgccctgtct gctgaggatc gtaggctttc agtccggatc cagccgcaca aggaaataat        660
cgaagtcgag acgaagcccc agaccgaggc caaagctatt tccttgtaga agcgatcgaa        720
acgaaagaga ccgtctcctg attctcatac tcctttatcg tccagacatt gccggcatcg        780
acaaagctgc tgcgcgaaac ttccagaaca gctttgtcct gtattcgaca ttcgatccag        840
acgaatatca cccatctgat cgaagaaggt cttgtccgga gtatcttcat actccccggg        900
ccgagggtac ggacactcca gccgcgaacg cgttcgatcc tccggcaaag taacgtaact        960
aaagggtata tggcgagcat gccataaggg aaagccagtc cgaaacccag attgcagtgc       1020
caaagtattg ccttttcgag agaacg                                            1046
```

(2) INFORMATION FOR SEQ ID NO:103

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1026 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

       (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...1026

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:103

```
gggcctcaac aatcgaataa aacggcattt gagaatgatc ttttctcttt tcttccgtgc       60
cggagcaaga gttgcataca aggactaaag ataattgcgc atacagagtc catcgggcag      120
attggagccg gaaatcaaga tcgttcaatg cctgcgaagc agatcgagag aattacggtg      180
ttctatacgg atggcactat caagagtttc gctcaaacaa agagtaagcc tctctttttt      240
cgtaatttgc actcgaatac tgcaactcga tttctcgatg aaatacaacc ataactgcgt      300
gtcgcgacca atacgaagct aaacgacagc tatttccttc ttaacttgta ccggagcata      360
atgaagtacg attatctctg ccggaaataa agccggacag tttgttcagg tactgactgg      420
atgtccaagg ggcttttttg ctcggcctat ctctgtttgt gatgtcgatt acgaacggca      480
ggaactattc ttctggttca aaaagtaggc aagggtacac gtgctttagc ttcattacag      540
catccgattc attggatctt ctatatccgc ttggacaggg gtttacgcta acgatctgcc      600
ggatggagag tatcgtcctc ttctcgtggg tggcggttag gcactgctcc tatgctctat      660
ttggcgcgtt gtatcagaga gaggggatcg tgccggatgt tctgctcgga gcgcgttcgg      720
cagatctgat cgttagcagg acagattctc tcgtttttgcc aatctgcatt gcaccacaga      780
ggatgttcgt tggggggtgaa gggctttgtc acgagccacc cgacccttcg ggaggcgatt      840
tttctcatat atatgtgtgt ggcccaaaag caatgatgat ggtgtagcat ccctggcacg      900
tcaacgaaat atcccgtgtg aaggtctctc tgagaatacc atggcttgtg gtatcgggca      960
tgtttgtgtt gtgtggaaaa tcnaaagaag gcaatctttg cgtctgtacc ggaagaccgg     1020
cttcaa                                                                 1026
```

(2) INFORMATION FOR SEQ ID NO:104

         (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 962 base pairs
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: double
             (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

       (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...962

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:104

```
gggccatgag tttgtccgta aaagaggcga agtagtcatc cggcacagat agtgtcgaat       60
actgtcctct ttcggacgga tattcacatc ggggtcgact gtttcatgtg agctttgtta      120
gttacgatta tagaggcttg ttcttaggca agtttaatca tcgggcgaca aaaaacgctc      180
```

```
caacttcttc acagcaggtg ggaccaatgc cttgagagca ccttccgagg taccggtgat    240
ttcggcattt tttcgtaagg catctcatcg tagtaccgaa ggttgaacac caacgctgtt    300
tatcaggcaa ttccagtata gccttttgga aggtaatctc ggctcatctc catcgaaata    360
aacatccccc gtgaggttgt cgagcagata gggtttttcgt ccgtgatcga tatactcata   420
tcgtcttcga tcttttttctt ctcaggaaat tgagtgattc gtacatggct atccgataga    480
gccaggtgga agtttggcct ccccacgaaa accgtccaat gcactccatg ccttcataag    540
gtatttttgga gcaagtcgtc cgtatcgtca tgactgagca ccattcgggg atttgccagt    600
agagtttacg gttgtacagg cgtactacct tttcaaagcc atacgccgcc ttgccggatc    660
tctcagctct tccagcaact cttcttcgaa atcaatagct tatcagccat aatgatgcgg    720
taaagatagc aaaaggtgct ttatctatgt caataaagtc gaagattcag ctctgatcct    780
gtaggagaga ccgaaacatg agagagttat gctcctgtgc tttccattct atgccgactc    840
tatcctttcg gctcatgcgg caatccaaat tcaaatcctt tgagttgcgc tactcagaca    900
aggtattgca aatgcctctc ggctattacc caaatacgtg cgaaaaaagt tttcaacaac    960
ta                                                                   962
```

(2) INFORMATION FOR SEQ ID NO:105

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 599 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...599

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:105

```
ggcgaagagc atgttcgggc gtacgctcca gtcctgagct ttgccgtccg aacgtaatcg     60
aagagatagt tgtagcaatt cagaaacgta tcggggaaga tctttcgatc cggctgatga    120
tttcgccgat ctccggtttt tccccatgag ttctcgttcg aagcagaggg cattgtacca    180
gagagcattc aattcgcgag atagccctca cgggggatga cggctttgcc attcagtttg    240
gcatcatcca acttaacggg aagcctgtgc ctaagacgta gagaagccca ttttacgaat    300
ttgtgccgtc gggtgctggg cggacagata ataagatacc actcgctgac gaaggagccg    360
aatctcttgg ctgcttccag accgttgcgg cggcatactg ctggatggcc caaatagccc    420
aaatcccaac gtccggttca tcagcccgtg tatggtgtcg tcatcttcat gcagtcgcat    480
gtagcgttcc tcgccggaat gacggtattg acgatgccgt tcgaatcgct tccggtgctc    540
tacacaccag agtacagccc ggtaagtgcc acgaacagat cgcgagctga acgtcgaac    599
```

(2) INFORMATION FOR SEQ ID NO:106

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 655 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...655

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:106

```
cagtattgcc caatgggttg atgagcgtta cccctttcaa tgtcagcggt cgacagagaa      60
tcgcttcgac aaagattcgc gttggtggag tgcgcctttt cggccgacaa tagttactgc     120
atcggtttca gccatgtgaa tctgagtgag taggctgtcc cgaactgagt ggaatactgc     180
tgatggccac ttccggacat tcgatcctga ttactgctgc tatggctctt cgctcagtcg     240
agaattgcgc gcccgggaga atacaaggct gtattggaca aatacggtat agatcagccg     300
tgaccgtaac cgagcggact gctttgaccg aatttgcttt tccgaaggag aaggccatat     360
cctgctgaac ctgggacagg ccctaagcaa tgatcgggag cctctgttcg attcttaaac     420
gactccacag tcgtcggcag cggctgatgg ggacgttctg ctacaatccg caagcagttt     480
ttcgtcagta ttcgtacttc aggtgagtcg gcgaccgatc tctgccggct attggaagag     540
cagcctccta tgacagtgga agcccaatgg gattcgactg cagggaaaat agcagtacga     600
cggctacagc gtgagatgag cgtgatgaca tcgtgtcgat ctcgtcaact ggatc         655
```

(2) INFORMATION FOR SEQ ID NO:107

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 891 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...891

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:107

```
ggggctgatg gaatatgttt ttcccgaact cttagccctc aaaggagcaa aacgcgtgat      60
ggcatcgggc ataaggacaa tctcactcat acttataagt agtggacaac ttggctcggc     120
acagcgatag tctttggctc aggtgggagc attgctacac gacataggca aaccacgcac     180
taaaaagttt gttggcgaca gtggacattt cataatcaca actttgtcgg agccaagatg     240
ctacctctct cttcaaacga ctccgacttc cgctggatgc caaactcaaa tacgacaaaa     300
actcgtagat ctgcacatgc gtccggcagc tctggtggac gaagagttac ggattctgcc     360
gttcgccgtc tgctcttcga agccggtgat gaatagatga tctgatgatg ctatgcgaag     420
ctgacattac aagcaagaat ccgacaaggt gcgcaagtat atagacaact atgctttggt     480
acgtcataag ttaaagaaat agaggagaaa gaccacgttc gcaacttcca accaccgatt     540
ccggcgaaga gattatgcag accttcggtc taaaaccatc gcgccacgtg gcaccatcaa     600
ggaggcgatc aaagaggcca tactcgacgg ggctatccca atgactacga agctgcccga     660
gttttcatga tcgaagcagc tgcttcctcg gtcttcaccc caaaaaccaa acatcatgcc     720
acagcgtata gacctcgagt gcgccccgaa gaggctactg acgaacaaat actgcgcaaa     780
catgagcgag acagacaaaa acagatccga ccgacataca tactataata atcgacgtcg     840
```

cagtattgac gctcgacaac gacagtatac gtcaattggg tcgaagctat a

(2) INFORMATION FOR SEQ ID NO:108

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 2496 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...2496

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:108

```
accatatatc gctatgaaat taatccaagt tcaaattcat tcttccggag gaactgattg      60
cattagagcc gaccaagttc cgcgacgaat cgcgaatgtg gtcgtacatc gtcgtacagg     120
agaaatcgaa catcgcgttt tcaaggaatt ctggagtatt tcgacaaggg tgataccttc     180
gtcttcaaca ataccctgtt tttcctgccc gtctctatgg taataaagag aaaaccggtg     240
ctcagtcgaa gttttcctcc tgcgtgaact gaatgaacga ctgaagctgt gggagtcctc     300
gtggatccgg cccgcaaaat acgcataggc aataagctct attcggcaat gatgaagagc     360
tggtggcaga ggtgatagac aatactacct ccgagggcgt acgctgcgct tcctgtacga     420
tggctctcat gacgaattca agaactgctt ttccaattgg gacagactcc tctgccgaag     480
tacatcgatc ggacgtgaac aaagaggatc cggagaggta tcaaagcata tttgccaaat     540
ggaaggcgcc gtggtggcac ctgctgccag tcttcatttc agccgcgact gatgaaacga     600
ctggagatca aggactgcca tttctcttac ataacggaca ccacgctttg ggagcttatc     660
gcgacatcga tgtagaagat ctgacaagca caaatggat agcgaggaga tgtatatcac     720
ggaggagtcg tgcataacat caaccgttca tgggacgaag aaaagaagat ctgcgccgta     780
ggaattcgat tcttcgtgct ttggaaacag ctgtgagcac agacggtcat ctcagccgtt     840
cgaaggttgg accaatcgct tcatctttcc tccatacgag ttcatctgcc ttctgctttg     900
gttacgaact tccatatgcc gctctctacc cactgatgat gacggccgct ttcggaggac     960
atgaactgat tatgagtgca acgacctcgc tgtaaagaa aagtatcgtt tcggtgctta    1020
tggtgatgca tgctcatcat cgattgagta tggccatagt gtatctttct ttgggcagaa    1080
cttaggcgat cgacacagtt tgttgtctgc agcattggag atgctacaac gagggtgggc    1140
agactgctca ccctttctcg gttctatgaa accgagcgtg gggattcgaa tcgccccatc    1200
ctttcctcaa tgcggtggtg gctttcgatc ggaactcaaa ccacaggaca ttctgcacat    1260
cacacaagcc atcgaaggga attgggtcgt acacaaaaaa gcaatggagg ggtctatcac    1320
gatgtccgat agatatagac attctattgc attccgtata cccgaaagta catcacctga    1380
gctggaactg ccccacccac aaatgtggca acgggatttt ggcgtatgcc gctatcggac    1440
gtagctcctt ggctgcatcc ggaggctccg ctccgaacct ctgactaatg aaagaaatga    1500
atgtaaacga cttcgagata tggctccagt cggttcgtac gaatcgctta tggcagccat    1560
caaggcagag cagattcagt ttacttcggg attgaaggac tgaatatgcg tgcgcgactg    1620
ccaacaactt caccacagaa gatctgtaca aaatagccga gatttgagag ataaaggcgt    1680
aaagagctat ttaacggtga ataccgtcat atacgtgagg acatagcact catgcgctcc    1740
gtcatcgatg cggcacaaaa ggcaaaatat ctgccattat agcttccgac gtagctgcga    1800
agatgtatgc caacagatcg gagtagaagt gcatctgtcc actcagctca atatcagcaa    1860
cgggaggccc tacgctttta ttcgcgcttt gccgatgtgg tcgtattggc agagagctga    1920
atatggatca ggtgcgtaca atccacgaga ccatcgtcag gataatatct gtgggcctaa    1980
aggccatccc gtacgtatag agatgtttgt cacggcgctc tgtgtatggc cgtttcgggc    2040
aagtgctatc taagcctgac gaacacaaca gctccgccaa cagaggagcc tgtgcgcaga    2100
tctgcagagg ggctacaccg tcaaggacaa ggatagcggt 'cttggaactgg acattggaac    2160
```

```
caatacatca tgtcgccgaa agatctgaag actattcatt tcatcataag atgatggatg        2220
ccggcgtacg agtattcaag atagaaggaa gggccgtggc cccgaatacc gtctatacgg        2280
tctgccgctg ctataaagaa gcgtcgaagc ctactgcaac ggcacctatg atgaagaggc        2340
cataggccgg tggacgaaca attggctacg gtattcaacc cgaggctttt gggatggcta        2400
cacctcggac aacggctcgg cgaatggaca catcgttacn gctcaggagc acgcgacaga        2460
aaatatatgt aggcaagggg atcaaatact ttcagc                                 2496
```

(2) INFORMATION FOR SEQ ID NO:109

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 656 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...656

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:109

```
cgcaattgat cgggatggct attctgattc ttctcgttct ctatgccaag gcaatgactt         60
gctcagggct tttcgctgac agaccgctat gattcggagg agacttaccc ccacaacttc        120
gaggagaaag tgggtttcga tgagattgtc gccttctcat cggccattgc catagtccga        180
tgggcagcga tcgggtatac agatgcatgc tcttgcaagg cataacgaag tcagccgctt        240
gcttgcgaga cggaagaaat gcanattatc ctgagagaag acgacttgtt tcccatctcc        300
gtctggccga tgtgcgagaa gcactaaacc gtatccgacc tgcggtacct atctggaaga        360
gcgagagttg caggatgtgg ctactgctct gagacaatcg aggctctcat ccgtttcttc        420
catgtggggg aagaagagga ggtaaggata caccgtaccc ccacctccaa actctttgt         480
ccgaggtcat gcctttccgg atctggagaa gcgtatcagc agcttgttcg atcggttcgg        540
aaaatgaaag acaatgcctc gcccgaactg atgaatatcc gtcgcgaatc tcttccatag        600
agaaaaatat ctcgcgcact ctccaaggca tccttcgttg gctcagtccg aaagct           656
```

(2) INFORMATION FOR SEQ ID NO:110

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1055 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:

(A) NAME/KEY: misc_feature
                    (B) LOCATION 1...1055

          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:110

cggggggattt tcctcctctt tttgggcttc tgccagcaat gagggattta ggctatgccc   60
aatcccacac tgccgtaccc ggtcacactc gctgacgagg ttatcagggt cgttgcgtgc   120
ggatgcttac ccgacccggg atcaaggata cggcatgggt agttatctgg tggcggcatc   180
gcttttttcc ggtaagtcga tgtatcgaaa ctgatctctg ccccattgga agccacttac   240
ttcggcacag agtacgccag cgtccgattc ggctgcgagg ttactatcga tacaggccgg   300
aagcaaatat atcgatggca gcatagggcc ggatgccgtg ctgaaggcaa agaccaatgc   360
acgatcgccg gcgtattcta tgaagtaact gagatacgcc ctacttgaat ggcaagaacc   420
tctatactgc accgtccatc gatctattgc caaagtgata gcaaatgata cggatgggtg   480
gcagccgttc atctcacgtt ccgatccgtt ggcaataaag tcgtggactt ggccaacaac   540
agtaccgctt ggctctggtc ttttcgtctt catcgcgtgg agacgagtta tcggctccgt   600
ggatagcgaa ctgcttgtcg atgaagtaac ccttacgtga ctactttacc cgaataaacg   660
ttatgaaccg gcgatatttt cttttgatgc ttgcttttgg agcctctgct tcatcctgtc   720
ggctcaggag tcgaagcttc tgtccggccg tcgctttggg agttttccag cagagtgggt   780
atgctgtggg agcatccaca ccggtacccg taccccaagc catggagcac gtcacgcgtg   840
gtatccgcga ctgaatccga tggtgcaact gagtgcttcg cgcgtttgct tgccggcagt   900
ccgtgggctg tgaacgtggg tatagccgta ggaaaaaagg catggaagct actacacgag   960
tgaaagatat gaaagtagct tcgtgtcgga ctcgccttat gcccggcaac cctgatgaag   1020
aatatccgga ctattcaccg gcgacaacaa tacgg   1055

(2) INFORMATION FOR SEQ ID NO:111

          (i) SEQUENCE CHARACTERISTICS:
                    (A) LENGTH: 578 base pairs
                    (B) TYPE: nucleic acid
                    (C) STRANDEDNESS: double
                    (D) TOPOLOGY: circular

          (ii) MOLECULE TYPE: DNA (genomic)

          (iii) HYPOTHETICAL: NO

          (iv) ANTI-SENSE: UNKNOWN

          (vi) ORIGINAL SOURCE:
                    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

          (ix) FEATURE:
                    (A) NAME/KEY: misc_feature
                    (B) LOCATION 1...578

          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:111

tcccccatag aaatctcaaa caaccgcaaa gtctttctga ccaatcaata ggggttgtaa   60
acatcactga cgggatggaa cctccgatta ttgccggatc tctgcttcct atggatcttc   120
cgtccgggtg tatggtcatg tctcacacgg tgggacatca taggccattg ctatttggat   180
atctacccaa ccaattctat ccgctcagca cgaaacccgt tgcaggagac gatgaggttt   240
ttgtcaacaa caaggcaggc aaatagagat cgatagcaac agccccatag tccagtggtc   300
gtatacgatc ttgaggggaa aagtgttttt cgcaaaagaa tgacgaaaac gcttataccc   360
tatcctttag agcacccatg ctcggcttta tgccatcatg atcgaaacac aaaattcgat   420
tatcaataaa aaacttaatg tacacagcta tgaaacgaat aattttatta ctcagtactc   480
tctgcttctt gtatcacctt atgtacaagc gcagaatgaa ggttcagatg cttattatca   540
caaatgtttg aactaatccg ttccgacttt cgaacgga   578

(2) INFORMATION FOR SEQ ID NO:112

```
    (i)  SEQUENCE CHARACTERISTICS:
         (A)  LENGTH: 1352 base pairs
         (B)  TYPE: nucleic acid
         (C)  STRANDEDNESS: double
         (D)  TOPOLOGY: circular

   (ii)  MOLECULE TYPE: DNA (genomic)

  (iii)  HYPOTHETICAL: NO

   (iv)  ANTI-SENSE: UNKNOWN

   (vi)  ORIGINAL SOURCE:
         (A)  ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix)  FEATURE:
         (A)  NAME/KEY: misc_feature
         (B)  LOCATION 1...1352

   (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:112
```

```
actctagagg atccccggaa tgataaagcc gacgggatta cgaggctttc cgcttttct      60
ttttgctcca acagctccgt cagggccgtg tacaactcct gaactgcaca ttacagctta     120
cttcaaggtc ttcgatacgc tttttgattc ttcataaccg gcaatcatcc gacgcatggc     180
aacgaaagtc cgcatgtggc aatgttcact tctattgctg tcggactgcg cagcaccgat     240
gatagatggc tactccctgc tcggtaaaag ccatcggagc aacggaactg tgttgagggt     300
ttcgggtaac cggtcacaaa ttgtgaccag ttccgtccat tcgtttcggt aagttcgaac     360
ataaaatctt ccgggaagcg ctgcaaattt ctctgacggc ctgtttgagc acttttgtct     420
gcacaccgta gagttcggcc aatgataatc caatatcact ctgttgccac gaatctcaag     480
aattttattc ggatgacgct tacatctgct gttattgtat tcatatcatt gatttataga     540
tttgtattca atttcaagtc attgttttgc ttgtgacacc ggagatctaa tatatccagc     600
ttatccgata gcttaagcat gtcctgttct atcttttatt ggtgatacgg gcgtaaatct     660
gcgtcgtttt gatattggtg tgtcccgcat cttcgacacg gattcgatgg gaacgccttt     720
gctcaaagac atcgtgcaaa tgtgtgccgg gccatgtggt aaatacaagc ctaagcaagc     780
gtaaaggaac ataggtggaa atatggtaac tggttgtgaa ttagttgttt ttcatgttct     840
gcgacagata gggataggca aaacagtatg ggatattgag actttcagtt accaaaccgt     900
tatcctgttg tttcccgaac aaactgaggt atgattattg gaagaatttt tctcatacgg     960
tttctttta tctgtttatc atattttgcg tatcagagaa cgctttgata acgggtaatt    1020
ttgcccataa gttaaagcgt atgaagatag agaaattcaa ggtgttgctc tacctgaaaa    1080
gagcagaccc gacaagtcgg gcaaagcccc gatcatggga cgcattacgt caatcgttcg    1140
atggtgcagt tcagttgcaa actctcctgt actcctactt atggaatccc cgtgagagtc    1200
gattgaacgg taaaagcaat gaagcgtaga ggtcaatgcc aaattagaca agttgttgct    1260
ttccattcat gctgattcga caccttggtg gaacgcaagg cagactttga tgccgaagcg    1320
gtcagaatct gtttcaggga agtctcgaaa ca                                  1352
```

(2) INFORMATION FOR SEQ ID NO:113

```
    (i)  SEQUENCE CHARACTERISTICS:
         (A)  LENGTH: 633 base pairs
         (B)  TYPE: nucleic acid
         (C)  STRANDEDNESS: double
         (D)  TOPOLOGY: circular

   (ii)  MOLECULE TYPE: DNA (genomic)

  (iii)  HYPOTHETICAL: NO

   (iv)  ANTI-SENSE: UNKNOWN

   (vi)  ORIGINAL SOURCE:
         (A)  ORGANISM: PORYPHYROMONAS GINGIVALIS
```

(ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...633

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:113

```
atccccgaga attcgcttcg acaaaagctc tgatgctaaa aatcaagcat agcgacaaga    60
gaatacagcg aacaggataa gatgaatatg aacttcttct tgacataaca tctgttggtg   120
tcagcaaatc ttttgtttat aaagatgatt aaatttagga acaaagtact ttaaacatat   180
cactgacgac gagaaaagag gagggtaaag ctattcttag aagcaactcg aataatgaat   240
gactagcaaa ccaagctcgt aatgcagttt gtggtgagcc agaaaaagta ttgacgtttt   300
tgatgataga ctgagcagga aagcctgtcg ttactatacc gtagtgaaaa ggagcaggca   360
aacattataa aagaacttga tcagtaccaa gtaaatattt tgtaggggat gatgcttcag   420
attatagcgt agccgatgct ttcgtgatgc gatgaattac cttgataagg caacacttgt   480
cgattttgca aggggcgaaa gagataatga cttttgcaga agccttcgag tgcaaggaaa   540
agaacctcaa gagaaaaaat ctaaaaaagg gaaagacaag gccacttcgc tcagaatctc   600
tttgcagaac accagatgat caataaagaa tcg                                633
```

(2) INFORMATION FOR SEQ ID NO:114

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 868 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...868

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:114

```
gagaatccaa aagcgtaata gaaaggtata caagcaaaat taggcttcac ggagttggtc    60
ttttttctta catttgtgga ctcaacaact aaatgcccat atatgctacg acttcatata   120
acatcgacaa acagtaaggc cgattttcta tcccacatac ccactctccc atcgcgaaag   180
gagagaaaag aacgctatac ctatgacgaa caagcaggaa taaggctatc aatagccgga   240
caaaacataa ggcacgcacc cgattcgagg ctgaatcagg tgcgtgcctt tctttatcgc   300
ctgtcgaaag ggctttcttc atctacgatc tatatataaa tggatgacaa tctatataga   360
tatggaaatc gatttatata taaattgaaa acattaatat acagatcgaa aatgatttat   420
atataaatcg aaaatggttg aatacaaatc gtttttccat ttcttagaaa cccgaatccg   480
agctaaagaa ttcgtttac caccttttgg ggttcaaaag gctcttactt tcaggtgcta   540
tttagaatca ttcaaaactc atcttcgttg ttgaaaactt ttttggtggt attttttcagt   600
gtttgccata agctccggag agcagagaaa aaggcctcca cgattgattg tcttcctccc   660
cctatcctac ccccaaaaat accgcttagc tacttatcga tagtatgagt gcggctccgc   720
tcttgatgcc ggcagagccg aaaaagggaa tcgtgcttca ttatttatta cttttgcgcg   780
ataagttctc gtgcagacgc ggccgatgac cggatcgtgc acaggagaag caaaacattc   840
ttacaggacc aagcgtacag tatggaaa                                      868
```

(2) INFORMATION FOR SEQ ID NO:115

(i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 751 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...751

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:115

```
cgatcttctt ccagtatgta ggccggagat gctatgtcgt ggtattttgc atctcttagg      60
attagttctc attcggtatc agttccaaga acagctctgg agctgtgcct catcaatgac     120
agaggggggcg tcgatcatga catcccgccg gcattgttct tcgggaaggc gatgcagtcg     180
cggatgctgt ccaaacggcg aagagcgata cccagcggtc taagcccgta agccaatccg     240
ccgtgggagg tgctccgtac ttgaaggcgt tcatcaggaa gccgaactgc tccttgcttt     300
ctccggcgta aagccgagca actcgaacat tttctgctgc aggcactgtc gtgaatacga     360
atggaaccac ctccgacttc gacaccgttg ataccatatc gtaggcattg gcacgcacgg     420
cacctggatc ggtatcgagc aagggatgtc ctccggcttc ggactggtga aggggtggtg     480
catggcgtag atcgcttcgt ttcctcgtcc cattcgaaga gggggaagtc cacgacccaa     540
ggcaggagaa tttaattctt gtcgcgcaga ccgagctgag agcccactcg aggcgaagtt     600
cgcacagttg cttgcgcgtc ttcatgaggt cgtctccctg aggatcagaa tcaggtcgcc     660
cggttctgcc tccatcgtcc gncgaactct tggagcgtct cttgtgtgta gaatttgtcc     720
acgctgctct tgacgtgccg tccgattcca c                                    751
```

(2) INFORMATION FOR SEQ ID NO:116

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 885 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...885

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:116

```
cgccggagga ttcgtatcag ctaatatcca ctcatctgtg tcgggtaagt gctgaagatc      60
gataacgtat acgactcaag cggctatccc aagcccgcgt cttcattagc gtagaaggtg     120
acgaatggga agagggcatc gatcgctacc agccatcgtc aaagaatgca atctggatgc     180
```

```
aaaagaaatc gtagccaaat ttctgcagcc cggtattgtg ggtcttggcg gtgctacctt        240
ccctaccatg tgaagctgtc ccctcctccg ggcaacaaag ctgagatcct gatctcaacg        300
ccgtagagtg cgagccttat ctgacgagcg accatgtcct tatctggagc acggcgaaga        360
gatcatgatc ggcgtgagta tcctgatgaa agcattcagg taaacaaggc cgtcatcgga        420
gttgagaata ataagaaaga tctattgctc acctcaccaa actggccact gcatatccgg        480
gcatagaggt atgccgttga aggtgcaata tcctcaaggc ggtgagaagc agctgatcgt        540
gcagtgatcc gcaagcaggt aaaaagcggt gccttgccta tcagcacagt gccgtagtac        600
aaaacgtggg tacggtattc gccgtgtacg aagcagtcag aagaacaagc ctctggtcga        660
gcgcatcgtg acggttacag gaaaaaactg tctcgtccgt ctaacctcct cgttcgtata        720
ggtactccta ttgcgctttg atcgaagcag caggtggctt gccggagaat acgggcaaga        780
tcatggcgga ggtccgatga tgggaccgcg ctctgctgtc accggatgtg ccttgaccaa        840
aggcagctcc ggagtattga ttcttcgata gagaagaggc agtcg                       885
```

(2) INFORMATION FOR SEQ ID NO:117

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2231 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...2231

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:117

```
cgtggttgat ctgcaaatcc accgattcta cctttctact aagaagaatc ggatttagaa         60
aaagtgtttt tctctatcga tcatgcaaaa gggacaatgt taataagaaa tatatgcctt        120
atggcacggt tttagattct gtcctaagaa tctcgttacg gatctctctg caaaaaagtt        180
gcaagtagcg gttaatatgg ggagtataaa gattggcata ataaagattc gttgtggttg        240
cgcgatgtca taccttgcat ttaatggttt tcgacgaaag tggcgagaaa acgaaaagta        300
tactgttacc ctcaatcgtt atgattatca accgactacg tttttggca tatgctcgat         360
ggagtagctt taccggatat caatgcttct ttgtcgatgt tgtaacacat gctgacaggg        420
tttatttggt agcagccaca gtaataagac gctgttgtat tcatctgaca ggaaaaatcc        480
tgttcattgg ctttactatc gtcttccggc ttgtccggtg catgtaggca gatagccgca        540
ctgaagatgg acgcgcttgg attctaacag attccggtat ttatcaaacg atgacttcac        600
aaactggagt ttgctcccct ctgaagtccc tgtgaccccc tgctgggtgc catggtttgg        660
ccacagggaa gtcatacact ggcattcttg ctgaaaaaga tggctctctg ttctttgcca        720
ccaatatcga tggagccatt cttggcagga gcaagctccc gaaactttcc ctgttcgcaa        780
tttcgtactc aactatataa agcaaacaat catccaatgc tccgtttagt cggggtgtaa        840
cgcgtacggg tgctcctgcc acttccgttt ggatcacgag catggaaacg attggtttgg        900
acttgacttg gctgccggag ccattcccgc acaatggaaa aaggggcttt ggtgcaaact        960
ccatcggatg gtaacttgta tattatgcca cagaacaagc cgaaggtata aagcgagtag       1020
ctgtggcatt tcgactgata agggcatcac atggaaacgt ggagccgccg atattatgtg       1080
ccggccgatc ctttctacac agccggctat ccgttgtcgt tcgtctggct tttgatgatg       1140
gggcttacaa tatatatcag ttgggaggcg ttagctttca ggaacattct tttcctcaat       1200
atggaagggt atcctgaaac tgaataaaac aattagtaag aaccatgcgg cacggatctg       1260
tgccgccatt gcttgtttgc agtgtgtaac ggccggatag ctgctcagga ttttctctat       1320
gaataggagg aggttttggt gctgctcagt attttggcga tgcaaacaga ggttgttcgg       1380
ttcatccgga gtaggtttgg agttggtcgg acgttacaat ttaattttcg ctgggctttc       1440
agtaccatgt tggattggcg tacattgaga gcgataccga taagtccggg aatgtcttcc       1500
```

```
ccgattttgc tcaagcggat ttaaggtcgg cttgactcag ctccacgtta gaagcgaatt    1560
taactttccc cttatagcga tggctataag tatcttggta cagctcggct gtctcctatg    1620
tagcggccgg gttgtctttg ggttttgctt cgggtgctaa aggttcgctt ttgctcccgg    1680
gattactgcg ggaatgggag tgaagtataa gcttaaccgc ggatcaatgt cggtatcgag    1740
tattctttca cgggggttac ttacgatgct ttggatgcgc tgacggataa aagtgtttgg    1800
ctcgaggatc cattaagatc aatgactcct gggtcaaaaa caaggatgct acaggggcct    1860
tatgcttagg attacgtatg acttcggcct gcgtaagact ttttgtaata acaatagggc    1920
ctcgaaacat tctaagggaa tagacctctc ttggattggt gttaggtgaa atatcttgat    1980
agaaaagaga tagatggaag gtgatggagc aagctccagt cagcagttat agtgccgagg    2040
catatcgctt tggtcatgat ggtaatggcc gttgggcaaa gatacgaggg aaagagcgat    2100
gcgaaagaca tgcggccggt gtggatgctc tgcgcgtagc tttgcgtgca gcagccggtt    2160
gcggtgtgga atatctcaca gcctacacct tcagtaccgg agaatggaat cgtccggaag    2220
aggaagtcag g                                                        2231
```

(2) INFORMATION FOR SEQ ID NO:118

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1121 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1121

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:118

```
ggttaccggc tctctgaaag tattgcagac cttttaagat cagtaaggtg gtacgatcgc      60
cggttgtatg gtcaaaggaa ggtaaggtca agcgaacagc aaggttcgtc tcatacgcga     120
cggtatagtg atccacaccg gagagctggc tctctgaaac gattcaagga cgatgccaag     180
gaagtggtgg ccggaccgaa tgcggtctta atctggctca ctcgaacgac atccaagatg     240
gtgattaatc gaagctttcg acgagatcga aatcaaaaag actctctaaa gatcaaccga     300
gacgggttac cacccatgaa cgcgatcgat ttagccatac tgaaattttg gcgataggat     360
tactgaaagg cctgtttgat ggtatcatca aaaggcagtt tcacttatag ccatagtcgt     420
tgccacgtat ggttgtgcct tcttgccgtt cccatagaga cgtggatcgg accttttttc     480
ggcctttcac aggcgtggct catacttttg ctttgatcgt tgggttcttg gctattttgt     540
tatcatcccg atggtcggca ataaggtctc gaaaatcgtt ggcaagaccc tatcggcatt     600
ctcaatcact tggccggcgg aatagtcggg atagggttag cagctattct gatgagctat     660
cttttcctga ttgccgacaa tgttttcaa gagacgaagc ggacagtgac aatccgtccc     720
ttcgcaatac ttcgagctgt atgaccatgt aaaaaacata gtcccaactt ttagccccca     780
tcggtgttta tgaattgaaa ttcgtaaaga gcttactcag agacttcaaa tatcaagaga     840
acaataatat attggatgag gttacaggca gtgaatataa atcggcttcg taaccgacat     900
cgaaacagaa actataggac gcggactttc caagatacag ttcgtctcat atctgcgaag     960
aaggaagagc cggaatggct ctcgaattcc gcctgaatgc ctataggcac tggctctcta    1020
tgaaagagcc gactgggcac acctcaatat tccaccgata gactaccaag atattatcat    1080
tatgcagctc cgaaaaagaa aaaggggccc aagagtttgg a                        1121
```

(2) INFORMATION FOR SEQ ID NO:119

    (i) SEQUENCE CHARACTERISTICS:

```
        (A) LENGTH: 1335 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1335

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:119
```

```
atccccgcaa gctcgaaaca cccgaagccg taacggcttt cgagggactt ccatacctga    60
gccgggcctt gaaccgcgct tctgcgtacg cgaaggcggc aggaagtccc cgttacgacg   120
agatatacgg acgaggcttt ctggcagtgt tcgatttttc tttcgtcgcc ggcaagcatt   180
ataccgaggc ggatgccgat cgaacatcgc cgtggcagtc attaccgaca ggttggcgcg   240
ccggtcttcg gctcttcgag cgaggccgtc ggccggcaag ctctgatcaa tggggcaaat   300
acaccgtctg cggagtggtg cgccatgtga cccctttctg cgattcgctt acggagatgt   360
gtggatgcct gtgttcaggc tgtacgaaga aaagtgaaga acaacctatt ctccagattc   420
aatgtaatct gtctggccaa agcccgaagg acttcgatgc catcaaggaa gaagtcgggg   480
ccttgactgc aagtgcaata gtgtgcagga gaagttcaat atcagttttc ccggccagct   540
gccgatcagt tcacgacgat gcaccgcaaa tttcaccgtg acgataccaa cctctggagt   600
atcgccgtcg cttcattctc ctcctggcag tgtttcttgc atcccggcca tcaatctttc   660
gggtatgacc cttagccgta tgcgtcccgt ttggccgaat tgggcgtacg acgctctttc   720
ggagccgtcc gatccatata gtccgccaag tgctggcaga gaatatgctg atcagtctga   780
taggggggct ttcggattgc ttttgagtta tctggtcatg gccctctttc cctgtggctc   840
ctcagcgtgg ggagccgggg aatgatgcag ggcgacatca acgagccatg ttcaatcccg   900
tcattttcct gatagctctc gtcttctgtg tctgatcaat ctgctcagtg cctttatccc   960
tgcctggcgc atatccaaga acccatcgta gaatccctct cccactaacc tcatcataca  1020
gatattatct gctacatcat attatcaaga tcatccgcgc cgaacgtcgt gccaaccttg  1080
gatatggctg gagatgctcg tcgtatgtgg cctgctttgg ttcgtcagga ctatgccgtg  1140
acagctctgc gtgcttggac acgcccattg aactacatat agaacacgtg taccgcatca  1200
cgctggcaac cgtacaaaaa gataagatgg aaaatggaaa gagaggtctg cggatcaggg  1260
aaaaaccatg atgcaaccct cgatctgatc gctgcatatc cggagtggaa gcgcttgtct  1320
ccaagtgggg cggca                                                   1335
```

```
(2) INFORMATION FOR SEQ ID NO:120

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 530 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
```

cctgaaagta atatccggat caaggggtgt gcagaggagc atgtcatcct gtcgcacaag   60
ccatcgaaca tatctaccag atcaccgaaa cgatcgcttt gaggcatacg gcaagggcgt   120
tgatggtgaa gtcgcgacga cgcaaatatc ttccagcgta ccatcttcga ctatcggctt   180
acgactatcg tgtcggaact ttccttacgg gcacccacaa attctatctc cagatcacca   240
tgcttacttg agcggtaccg aaattggcga aaacggatag gtgagccttc cgtccagctt   300
cttggctaca gctttcgcca ggtcgatacc gcgccctacg gctctatatc gatatctttg   360
gaaggacgat tcaagaatat atctcgcaca taccacccac gacataaggt ttccagtccc   420
aactgatctg ccactttctg cataagacgg aatatcggga tgtcgattta ctaagaatta   480
actctttgtc ggcattctaa aaaatcaagg aatggattgg ccgacaaggt   530

(2) INFORMATION FOR SEQ ID NO:121

        (i) SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 457 base pairs
              (B) TYPE: nucleic acid
              (C) STRANDEDNESS: double
              (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
              (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION 1...457

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:121

cagcttggag gctccgagtc cgcgctgaat ctgaatggta ctggcttgat catcagacca   60
ctccaattgc tccaatatac tttcccgtct tccatacctt gacaggaact ccgttgatga   120
gtacaccgaa gttgtaagtg tcgaatcacg cacattggta cgaccatcac cgaaacctcc   180
gcttcctttt gtcgtaaggt agagggagtg gatttaacca gttcgggaaa ttcgacattc   240
aacgagctgc ctgaatatca gccacacgga tattggaaac gggtaccggc gtcaacggtc   300
tttgggcacc acagaggcta ttacctgaat ctcatccaag ccgtggcctg gggatcgagg   360
agaatcgtac cgaggtcttc ttgagaacct ctcctataga gcgagttacg gtagcataac   420
ctacgcaacg gaaagttaag aagatttggc cggtact   457

(2) INFORMATION FOR SEQ ID NO:122

        (i) SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 495 base pairs
              (B) TYPE: nucleic acid
              (C) STRANDEDNESS: double
              (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...495

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:122

```
ggcctcatcc ggtatcggag ccatcagctc tgccatctgg gtatgcgtga ggccggcgac      60
catatcgtag ccggcaagac gctctacggc tgcaccttgc cttcctcacc cacggactga     120
gccgctacgg tgtggaagtc accctcggga tacccgccat ccggaagagg tggaggccgc     180
cattcgcccg aatacgagct cgtctatctg gagactccgg ccaaccccaa tatgtacctg     240
accgaatcaa ggcagtctgc gacatcgctc ataagcacga aggcgtacgc gtcaggtgga     300
caatacctac tgcacgccct atatctgccg tccgctggag ctggtgccga catcgtggta     360
cacagcgcga ccaagtacct gaacggacat gggacgtcat cgccggattc gtcgtaggta     420
aagaggacta catcaaggag ggaagctcgt cggcgtcaag gacctnacgg nggccaatat     480
gagtccgtcg tgctt                                                      495
```

(2) INFORMATION FOR SEQ ID NO:123

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 603 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...603

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:123

```
cagcgactgc tcgaatccct ctctcgtcgt cggagggacg aagtggagcg cgtggtggcc      60
atgtcgttta cggacttcag ccacgaagcc gtctcttcgc tatcgtgccg ctcccgatga     120
gcagcacccg atgataacct tttgtctttt tcgctctttg atgccgaagg tcgtcaccca     180
tagacggggg aaatatccca agggcaacac agtcgccacc atcataaaga agagccgcag     240
gtagacgccg tgtcgtgtac gatgtcgtcc accacgagca gcagaaagac gacgcggatc     300
cgaccagcac cgacgccacg gtcgtcagca gttcggatat tcgcttttgg ctatgggttt     360
gttgtagtat cccgagaggg cgaagagaga gaccagaaaa gcagatagag gatccccacc     420
cacaggctct tggcgttgaa ggatattcgg acagagtgga gtatatgcgc tcttgctctt     480
ccgtgaggta cgcagcgtat tgtagctcaa ataggaagcc acaattaccc gaagacatcg     540
ccagcagata gcgccaggcg gtgtagcttg catacgtgtc aattggcgat caacctccac     600
ttc                                                                   603
```

(2) INFORMATION FOR SEQ ID NO:124

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 858 base pairs

(B) TYPE: nucleic acid
           (C) STRANDEDNESS: double
           (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
           (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
           (A) NAME/KEY: misc_feature
           (B) LOCATION 1...858

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:124

cctgatactc ttgctattca gtgccctcgg tgtggtcgca acccgtattc acactttttc   60
ctccgcttgt ccaatgccgt tttgtatggt caggagcggt ctttctggtc cgtatgccac   120
gctatatcag ttatcggctt tttgtcttat cggccgtatc caaagcacat tgttgctctc   180
gatctgttgt ttcctctatt ggacgacaag gggcaactca ccgatttcga tttgtgggaa   240
agcctttttt cttggctttg ctcttcttcc tgttctgttt tgtcttttgg ctgtgaggat   300
gttttatgcc ttgtggtgct atttctttgc cgatcgtgag actagatgat ctggagaggg   360
ggttatgcgt tgctcgaatg gatgtggggg atctcctttt tcccgttgcg gtcatctatc   420
tttatatgcc acaattatat tgctaagcta cttgttacca gctattttcg tgctgtggag   480
attagtgctt tcgctaaaac gatacgattc ttctcgatca gggaagtagg ttttttccac   540
tttctttgta cctttgtgcc cacgaaattt taccgttggt ttacttgatg ccttattgga   600
gtggtcggta aacaataaag agataatggc tctatggagt aaaagtaaag aagatactca   660
tttcacagcc acaacccgta gcgggtggtc gccttattac gatattgctc agaaacatgg   720
ctgtgaggtc gtgttcgtcc tttcatccaa gtagaagtcc cgtcagtgcg agagaatttc   780
gcaacaggaa agtgaatatt ctaagaccat tcggccatca tcttcactgg acctaccagc   840
tatcgaccat ttttcagt   858

(2) INFORMATION FOR SEQ ID NO:125

       (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 1879 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: double
           (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
           (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
           (A) NAME/KEY: misc_feature
           (B) LOCATION 1...1879

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:125

agatgctgaa atcggcattg caagtcgacg agttggaatg cgtgttctga attgtgcgat   60
gctgcgaccg aattgtttac gctctttggt gtacttcacg tctcgtccat agctccctgt   120
gcaataccga gggcctgaga tgcgatacga tacgtccgcc atcaagggtt ttcatggcga   180

```
tcttgaagcc accgccacgc gaccgagaag attctctttg gggacgatac agttttcaaa    240
aataattcgc atgtagccga accacggata cccatcttaa gctctttctt tccgtagaga    300
acccgggagt tccttttttca acgatgaaag cggtgatacc acggtgccct ggctcttatc    360
tgtcatggca aataccacgt atacgtgagc atttcggcat tggtgataaa aatcttgtta    420
ccgttaagta cgaaatgatc tcctttttctt cagcaaaagt ttgctgagca gcagcatccg    480
tacctgcatt ggttcggtaa gtccaaatgc accgatccat tcgccagaac agagtttcgc    540
aaatacttca tcttttgttc ttctgttcca ttttcgtaga tgggagctcg cacaaagatg    600
tgtgtgcaga gagaaccacg cctgtggtag cacataccgg cttagttcct ccactgccat    660
tgaatacatt acgtttgtac cgccggacca ccgtattcaa cggggaaagg gatgcccatc    720
agtccgattt cgccctcttc tttactgttt cgatggggaa acgttcctgc tcgtcaattt    780
ctgcgccaga ggttttactt ctttctcggc gaaactgcgg atcatctcaa gaacaattgt    840
tcttgggggtg tctgagaaaa gttcataatt cttgaagttt attggtttgt agtgatacta    900
aaaactcttt tattgttgca tcgggatgat ccagaagcaa aagtcaatga agcttcagtt    960
gcagcttgta cttgttctgc gtaaaatccg gatgtatttc tgttacgaca aggcctttt   1020
ccgggcacat tcgatcacac acatttctgt gataatcaag tttacttgtc cttttgccta   1080
agtggcaaag agcatttttt catgatttttg gggttaccct tggcagttgc tccatagcta   1140
aaattacctt gcgggttcct atcagcaaat ccatggtcct cccataccgg gtgctttctt   1200
gccgggaatc agccagttgg ccaagctcca ttttcgtcta cttgcagtgc tccgagtaca   1260
ctaacatcca catgccacca cgaatgatgg caaatgaggt agcactatca aatgaagcag   1320
ccccggaata gccgtaatgg agcctccccc tgcattgatc agataaggat ctctttgcct   1380
gtttccggag cagggcccat cccaatcatg ccattttcag atgcaaatat acttgcactc   1440
cgggttttag gtaattgggc accatcgtcg cagacctata ccgaggttga ccacatcacc   1500
atctttcaat tcgagggcac acgcttggcg atcacttctc tgatttgatc ttttttccatg   1560
atgaaaaaat tttatcgatt tctatttgtt attcattctc ttatgaaact cctgagcatg   1620
aatgaagcaa catcatcagc atatgtattg gcaccgaatc ctgcatatag ccaagctctt   1680
tggccaattc ataggtgata cgaggccctc cacagccaag atcatcttat ctctcagacc   1740
ttctgcctcc atgagttcga ccagtctatc agattcttga tatgcacatc ttttttgtgtt   1800
actgtntgag atacaaaaga ncatcggcat tcagttcgat tcctttggna ataaattctt   1860
catcggaacc tgactgcca                                                1879
                                                                    1879
```

(2) INFORMATION FOR SEQ ID NO:126

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 662 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...662

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:126

```
cgggggattt ctttgtggag tcgccgatca tcttgctggc ggctattatt ggttcctgaa     60
gatatatgag aacggcaggt attgcacctt ccgcatgca tcgagtttct gaacagacct    120
tatgcgcaga tctttccgat tctgactctt acgatgagct ggccaactat ctttcaccct    180
ttatggacgc atgggaggcg gcgcacagga tcaacttcag ggacagatcg cttcggccaa    240
agaatccgct ttcgaggatg atttctccgg cactttactg ggtaatgacg ggcgtgactt    300
ctcgctcgac atcaataacc cgaaagaacc gaaaatcctg gtgtgggcaa caatcccgac    360
cgacaaaata tctattcggc ggcactcggt tttacaacag ccggatcgtg aaactgatca    420
ataaaaagaa gcagctcaaa actcggtgat tatcgatgag ttgcccacca tctacttccg   .480
```

```
agggctggat acctgattgc tacggctcgt tccaataaag tggcaagtct gtctgggctt        540
caggatttca gtcagcttac ccgcgattac ggagacaagg agagcaagtg attcagaaca        600
cggtgggaaa tgtttttcagc ggtcaagtcg taggtgaacg gcccagacgt tatcggaacg       660
ct                                                                       662
```

(2) INFORMATION FOR SEQ ID NO:127

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 395 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...395

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:127

```
catcggccat cacacgagtg atgagcaaag gagcggtacc gctgttgcga acttgaagct         60
atgccctacc gatccttttt cttccggaat caggccaagt taaaggactg ctcctcgacc        120
tgtatttccg gactctcctg agctgtcgca acagaggagt caataggaaa aggaagaaga        180
gcagccctcg aaatgtctga cgatcatacg ccttgtacta cttgcagagc tatgctattt        240
attctcaacc cctttgatgc gtagcgtaaa ggtaccatcc ttaccattgc tgtaacggct        300
atggtcttta cgaactgacc cggacggccg gcaggattat atggacgtct attttgcttg        360
tctgacccgg agcgatgggc tctttgctaa acggg                                   395
```

(2) INFORMATION FOR SEQ ID NO:128

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1939 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1939

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:128

```
ggtaaatatt atttgataat ccggaagaag ttcggcaaga aaattattca ttcttcatcc        ..60
```

```
agatttttcca gcagaagccg aatccagctg aatcagttgt cgtcgatgaa gagcaattcc     120
tcgataatcg tgaaatcctc ctgtgtcgag ccaccgagaa ggggcgtaca aattggtctt     180
tgtcgaagaa tcgggcgcat gcagccttt t gactgcagca cgaagctcct gcctcattgc     240
ggacgaatct ccgttcgtcc ctcttggatc caatcgtata tgaccacacg atgagttctt     300
cgtctttgtc gttgaatagc tgtacttccc ccgcagccgg atcatttgga cgaaaagatc     360
actgatggct atcggtgccg ttttggagct gtggggtgtt cgatcggtgt gcggaacagg     420
cgttcgagct gaatctgtac tcgttgggtt tcattgttgg ctaaagagat tgtgtatggg     480
gtttatttgg cgattgcaac tgattcagac tgtctcgaag tgtggcgatt cgcgcttcgc     540
atcgcttttc ttcttttgct ccagttctat gacagcttgc ggagccttgc cacaaagctt     600
tcgttgccga gcttcttcat gaccgaagcg aggaattctc ctgataggcc agttcgtcgg     660
acaacttctt gatctcctct cccacgcgat caatgcgccc atcgggatgg cgtattccag     720
tgtaccgatc aggaagaggt agagccgctt gtctttcttt ccactcggtt gatggcttca     780
aggtgcccat tttgatgatg acggcatcga aagaggcatc gtgttcgttt cctcttcgag     840
cgtcagcttt tccttgaaag gaatgttctt gccggtgcgg atttgcgaat ggcggctatg     900
atctcccgtg tacggtcgaa ggcttgcagg agtccctgtc cgtctcatgc gcatcgggca     960
ggaggcagag catgatggtc cgccatcgtg acgcggttcg agtgcatgcc atagctcttc    1020
tgtgataaag gcatgaaggg atggagcaaa cgcagcagct gatcgaagaa tccgatcgac    1080
tgccgtaggt cttcgcatcc atcggctgac cgtatgccgg cttcacctct ccagatacca    1140
ggaggagaag tcgtcccaga acagcttgta aaccaggtca gtgcctcgct cagacggtac    1200
ttggagaaga gatcgtccaa ctccgcttca cctcatcgag acgatacccg aaccatttca    1260
cggccagagc cgagcttcgg gctgcgtgga cgtttctgcc tgctgccatc cttttacgag    1320
gcgaaggcat tccatatctt attgcagaag ttacgtccct gctccgagag cgttcgtcga    1380
agagcacatc gttgccggcc ggagcggcca tcatcagtcc ctgcgtactc cgtcggcacc    1440
gtatttctcc atcagcatga tcggatccgg gagttgccga ggctcttgga catctttcta    1500
ccctgaccat cgcgcacgaa ccggtcagat atacgttgtc gaagggtttc ttgccacggt    1560
attcatagct gccatgatca tacgggctac ccagaagaag agaatgtccg gagccgtacg    1620
aggtcgctcg tgggatagta gtagtccagc tnttcgttct ccggatcatc acatcnccga    1680
atacgcttat cggccatagc catgaggaga accactatcc agcgagtcgc tgtcctgtcg    1740
cagatcctct actgtgagcg agtcgatccc gtttgcttac gtgccagttc cacggctttt    1800
tcggccgtct ccgcactacg atacttccgt ccggcaggta gtaggcaggg atacgatgcc    1860
ccaccagagt tgtcggctga tgcaccagtc cttcacgttc tccatccagt gcggtaggtg    1920
ttcttgaatt tggccggat                                                 1939
```

(2) INFORMATION FOR SEQ ID NO:129

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 1073 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...1073

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:129

```
cccgtgcttg tctcctcctt gctgctatcc aaatagagga tggccgaatg acgaagccga      60
acagactctt tcgcgactga agaatcgccc gcaatttggg atgaagccga tgcttatatc     120
gcggaaatcc aactgttgcg aggcgacacc gcgaagcggc cgaaatagcc gacagactct     180
tgtcgcgcaa ttcgccatga gacagcgacc tcaactcctg cgtgtggcag gcaatgctta     240
ctacctttgg gcgattcgaa caaaaccatc gactatcttt tcgactacag cgaaaggtgg     300
```

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...1035

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1223

```
aaggccgacg tgtgctgaaa anggccggaa gtcgganagg ttaatccgac cttgtggtat      60
agaaagagtc ggtattgtac cggactcttt ccggtttatc ttgccttaat tctatcgttg     120
tatgaccaat ccggggttaa agagccataa tcaccaaact attcgacgag gatttcggga     180
tgccacgatg atgaagcagg ataataaagc aatcggggca acatcggaga gagagaaaac     240
ctctcccatg ctgccccgat ctgtttgtta gtactcgcgc gtcgttattg aacgtcactc     300
tttctgtaat atcaccgatc tgcaagagga aaacgccctt gagtggctga tatctatctg     360
ctggaagatg ttattaagcg taactctgta aaaatctgtc cgttcatatc tataagagat     420
gccactttgc ctaccatttc tccggtatct ctatcgtcaa atcttttgat gtgggtatgg     480
gatagacatg aagcctttgg tgtcgacttc tcctacggca ttgctcttct tcatcagggt     540
gtcacttctg tatctttctc aagaaggaat tcatacggag cttcgatatc tctccgttca     600
ccattacctt gtccacttcg taaccttcgg cagggatgga tgtattttaa tacgacggcc     660
tgccactaat gtggaaccgc tgttcagggc tgcccatcgg ccgttagctt tatctctcca     720
ttttcgggct ggatgccact acggaatata cagagatagg ttcataaatc gcttccactt     780
cattgtagat tctttgacta ctacatgagt ataactgttt ttgaagggta gtctgaaaaa     840
tccacataat ctttaagtcc gaaatatact aaatctgcta tgaaggcttt gggaagaatg     900
tctctgaagc gagcatttct ttgtcgtact ctagtagtac cagaaatcgt cacgcccggc     960
tttgacaata tccattcctt actgtcgtat tcgtatatca attcaaattc gttcaaacct    1020
gtactggccg ggatc                                                    1035
```


(2) INFORMATION FOR SEQ ID NO:1224

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 588 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...588

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1224

```
gatccatacg gaataataag cggagggcgt attccaaaag gagggggtgc ggggttggcg      60
ctctccaatg ccagactttg caagacgatg agcaaaacca aacgagggta tagataagaa     120
ttataagcga tttgttcata ttctaatgag gcttaaccgg taaaagaaag ctatctttgt     180
atgtcacaaa gatatattat tgtacggcta tccgtatata aataacgaca gaaccgaatg     240
gaaataaaaa ggcggcattt gtaatcagta ataccgatgt gcgcaaatgt cctgtacgag     300
gctccccgaa tatgctttca tcggccgttc gaatgtgggc aaacctctct gatcaatatg     360
cttaccggcc aaaagggact ggccatgacc tccaaaagcc gggcaaacg cagctgatca     420
accattttat catcgacgat tgtggtatct ggtcgatttg cccggctacg gatatgcccg     480
tttgggtgcg ccaacaggga atccttgcgc aggatcatcg agacgtacat cctctgtcgg     540
agcagctttc cagtctcttg tcctgatcga ttgcaggcat gaacccgc                 588
```

(2) INFORMATION FOR SEQ ID NO:1225

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2199 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...2199

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1225

```
gagaaaggcc tcgcgctttg atttcgatcc gtcgaacttt cttaagtagt cgcttgtctg      60
cacttatctc tgattaaggg acttctactt tgttcaggtc tcattgacga cagcatccgg     120
agtcaaacta ttagcctctg cctcatactg agtccgatac ggtgacgcat cacgtcatga     180
catacggcac gtacatctca ggaatcacat aacctctatg cttgatgaag gcgtatgcac     240
gtgcaccaat gctaaattga tagaagctcg gggcgaagct ccgaaactga tcattctttc     300
agagcattca agccgaattg ttcgggatag cgcgtggcaa aaaaatatca actatatatt     360
gctcgatctt ctcatccaga tacacctgcc tttcacttgg cgcgcttcca gtatttcctc     420
cgtagtgatt atcggacgaa ttctgccgac cggccaccga tattctgacg aatgatctgc     480
atctcctcct cttttgggga tagtctatca gcaccttcat catgaatcgg tctacctgtc     540
ctctggcaac tgataagtac cctcttgctc gataggattc tgggtagcat tacgaggaaa     600
ggctcaggga gcttgaaagt cgtttcccca atggtaactg tctctcctgc atcgcttcga     660
gcagagcact ctgcactttg gcaggacacg gttgatctca tcagccaaaa taaagtttgc     720
gaaaataggg ccttgtttac ttgaaattcc tcccgtttct ggctgtacat catggtacct     780
accagtcagc tggcaagagg tccggtgtaa attgtatgcg gttgtacttg gcataatcag     840
tccggccaga gttttgatag ccaaagtctt ggctaatccc ggactccttc gagcaggata     900
tgtccatcgg ccaacagtcc gatcagaagc gctccaccaa atggttctgt ccgacgatat     960
tctgcgccat accgtgcgtg tgagattcac aaatgagctt ttctgctcaa taagctctgt    1020
gagagcctta tgtcaatggg tttcactcat tttttctat atcttttctt gctaaatata    1080
atgaagatta tgcacaccat ctcatgttga gatagacata tagcatctgc agggtttaag    1140
cgcgaagttc agccaacggc cagcattcgc tcgatcagag caaagccttc tccctgattt    1200
cagcaggcac ctttacttca taacgttgtg gcggagagct tccaagacct cccacaaacc    1260
tgtttgtttc atataaaaca gcggttgtcg ggttgaatgg caataaacgt tttacccgga    1320
tttctttccg caacacgtgt agcgtctccg gctctgtcgc aataacaaac attttttgtc    1380
ggactcccga gcatgattaa gaataccggc cgtggaatac aaaagcagcg atcgctactc    1440
agcactcgtg gcgaatgaga gccctcgctc ccggatgaat gagaatatca gcatcgggat    1500
acagctccat agcctctaaa tggattcttc cgtaattcgc tcatgtacga aacacgaagc    1560
attccaaatt ccatctcccg tcctgtcttt cgcgagatat aagctccaag gtttctaccg    1620
ggccaaagag aatttttctg tctcgaggca agctctccac taccttagtg cattgctgct    1680
tgtcaagcaa gtagtccgtc caagccttta cctcgcaggt cgtattgaca tagctaacga    1740
tgagtccatc ccgggttctg ctcctccacc gacgcaagcc ttcagcagag gcaccttcgg    1800
ccaaagaaca accgcgtatt tcgtgggagt gaggatagtc ttctgcggcg aaataatcga    1860
agcgtttcgg ccatgaagtg gactccgcaa aagagtatcg tatccgcctc ctatcggcag    1920
cctgacggga cagaccaaga gaatcgccga tataatcggc atgtcctgca cctcagggcg    1980
tgcatagtag tgcgccaaaa taatggcatc cgttctttct tgagaagttc tatctcctta    2040
agaatatcct ttgtttgcta caaaaaccaa cttaaagctt aattgagtaa ggaggaaatt    2100
catgctgtgt ccatggccgt aacgctatga gtcaaagcgc ctatgctgat gtaatcacac    2160
ccgtttctgc cacactttgc agccgttcga gtgtcatat                           2199
```

(2) INFORMATION FOR SEQ ID NO:1226

     (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1796 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1796

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1226

```
ggggggagcga gccggtcagc aaaggactgc cgagcgattc ggcaagaagc gggtcagtgg     60
atgaagagcc aggcggatac ctacctgctt tcgattctga aaaccttagg cagcgaactt    120
ccggccggta ggacgaaggt atatttcgca tgtggttgtc cttcatatag cggaatgcct    180
cgttgtctat acggcatatt cggctgccat gctcatgtcc gaacacatga tcgagaggct    240
tttgcccgag gatccacacc tttcagctcg catatccgct ccacgctccg attcgaaggg    300
catcgcatcc gtaggcatac ccaacttcgg tgggatagat gatactttgc cgtcgcgaag    360
agccgatacg gcacgttcca attctcgtct gtgggattgt cggggtaaat cttgatgatc    420
atatcatttc agtgtatatc gaataggggtg aaagtcttat actgtcttct tttgtgaagg    480
tcggtagctt agtagttgta cccagctacc ctgccattgg ctgctgcgta gcagccgttg    540
atctcggccc gttgtttata gttaatataa ggatgccgaa ggatactact cctacgactc    600
cttttagatc gatacgatcc ggcttgattc ctattttaac catggtctca gagcgcaaaa    660
gcgttcgtag tccatgccgt aaacctctgt agctgtagca cggtatagta gccgccaagc    720
tgtcggcggt aggatcgatg cggcgagcga atgtaggccc tatcccgggt atgcgagtaa    780
gggtgccgaa tcggctgcat tcaggtcgat caccgtaccg cgaggaaatt tatggccgat    840
cgggcatagg cttctctgac aggaggcccc acgtagtccg cacggtcacg atgctgtcgc    900
ggctttcctt gcgcgattgt tccgaggatg ataaggcctg acgtaattct tcttttcttc    960
ttttctaccc ggttcatcag cgacgtttga acagcttcgg ccacaggtgc attgccactg   1020
gccggccttc tttgaagatg aatagcccga cgatgaccat cagcaggagc aagatgctat   1080
aatgctttcc cgatttgccg aagtggaagg agtctttcat ctgtgtacgg ggctgtttgg   1140
cggttgggtt attccgagaa gagtagcccg tcgcgctgtg gaggatgcgg tcggtgccgg   1200
ctgccaattt ctcatcgtgg gtgacatcag gaaggtctgt cccatctctc ggcacagacg   1260
gaagaagaga gcgtcagctc ttctttgtgc gctgagtcca gactgccgct cggttcgtcg   1320
gcaggatgat ggccggatgg ttcaccagag cacgtgccac ggctatccgc tgttctcacc   1380
gccggagagt tccgatggct tatgcgaagc tctgtcgctg agttcagatc ggaaagcagc   1440
cgttcagctt cgcaagaagc ctctttcgg tctttccggc tatcagagcc ggtatcatca   1500
cgttttccag agctgtaaat cgggtagcaa tcggtgaaat tggaagatga atcccagccg   1560
tctattgcaa attcggcttg cttccgattg ttcatgccca ttatatcggt gccgtcgtac   1620
gcaattctcc gctgtccgcc cgatcgagcg tacccagaat ttgcagagcg tggtctttcc   1680
ggcaccgctt gtgccgacga tggagactat ctcccacggt cgatggcaat atctacccct   1740
ttcagtactt ccagagagcc gaaatcttgc gaatgttgcg agcttctata atcatt      1796
```

(2) INFORMATION FOR SEQ ID NO:1227

     (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 611 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double

(D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...611

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1227

```
gccgacggcc ggaatgtact tgccggtact cgcctgccga taacgactcg ttggtgctac      60
gggtgatcaa cggctatgcg ccgcttcctg ctgattcgca ctgatcgacg aatcgatcac     120
ctacggttca tcgcaggaca gtgcttcggg aagaccgaag aggagaatag cgaatcgtgg     180
tggtaatcgg gtatacttat ggaggaagaa cttcagtacc ggatgactcc cgagatggcg     240
gagctttcga cgaagacgat gcagaggaca tctcggacgg cggactcgac ccggggaaga     300
ggacagatac gaacatttcc gcactgtagc agatccggga cagcacttat tcgtatcgac     360
aaattccttg tcgacaggat gaacaacgcc accgcagccg tatccaacaa gcggctgaag     420
ccggtgccat attcgtcaat gccgaccggt aaagagcaac taccggatca aaccgggcga     480
tgtggtcacg tggaactnct ccggccacga cgggaattgg agatcattcc cgaagatatc     540
cactcgatat agtgtatgaa gacgatgtac tgctcgtgat caataagctg ccggattagt     600
                                                                     611
ggtacacccc g
```

(2) INFORMATION FOR SEQ ID NO:1228

         (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 515 base pairs
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: double
             (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...515

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1228

```
tctcctccga ataaccctcc gtgtggcttt cgagcaatct gtcataggct cgttataagc      60
attctgcccg ttgtagaata cattatagcg cgtagtgaat tgtgatagaa tcgggatgcc     120
gccgtattct tcgatgtgga gcaggacgca taccgaatac gacagctacc gggatgagca     180
gatagaatac gaggagtata gaaatctatg gctacgcatg gacaaaggac ttaatcgttt     240
tggctaaagg aacaaggcca ccagcaccag aatgatgaag gctccggaag ggatcccaac     300
ctataactgc cccagagacc cgtgaaggct gccaaagccg ccagattaca gaaccgaaca     360
ggatcgaaga gaagtgcgaa gtgaaaagat tctgatgctc tgaggaaggg tcaggagcga     420
catcagtagc atgataccca caaacggata ctgagcacaa tacccacagc cacagccacg     480
gacattaagc tcttcacgag gtgaacccta attcc                               515
```

(2) INFORMATION FOR SEQ ID NO:1229

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1886 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1886

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1229

```
tcgcgcatca ccagctcacc gtccacatcc gatatggcag gcttacgctg ggggattcgg      60
cagccgccgg cactcccatt gcattggttc gcggtgtctg atcagagctt ttgtcatggc     120
attcaccgtt tcggcctctt ggtggataag gaggctccct gacgggcctc gaccagcttg     180
gcacgtgcaa tggctctccg aagtatgcga gggcaaactg cttgttcagc tctacagcct     240
gatcgaatcg acgatggcct gctccaaatt ctgtatcagc atatagtcca aagccgacgg     300
aagcacagat ctgcattgcc ggcagtcctc tcggatattt ccgtatgtcc tgttcgtgat     360
atgccacctg ctcttgactc agagctacct caggttgatc ggtttgagtc gcttgggcag     420
aacctttttg tcgttgaagc ggcaatggct tccgagtagt agacgcgcgg cacctcttcg     480
gaagaggact ctcgtagtag ctgaggacga atagcggcga gggctgtacc tctacatcgt     540
gtcctgaatc cgcccacgta tccgactgga gtagcgtgtg cgcttctcga ggatttctcg     600
gatacgacga gcaggttgaa cttctctatc gtttcgtgct atcctcacgt gtctctttgg     660
tcgaagtcga agagctgctt tttttctttt ttttgtcttg ctctgtgccg cttttttctat     720
gtcgaaagcg cgccatagtc ccgttcggct ccgcgagtgt cgcccaatgc ctttttggct     780
tggggcgagc atagtagccg acgacaaagt caggatagtg tcccagcact ttgcgaagtc     840
ggtaatggct tttcggttct cgttgatctg cgtgaggagg atgcacggtt gtagagtgca     900
tgatagttct ccggctccag acggatgact aatcgaagtc ctcgatggca ttgttcacgt     960
caccgaggta agagcggagc aggcacggtt gaaacgtgcc aacttgtcgt tcggcttttg    1020
gcgaacgact ggctgtagtc gtccatggct ccacgcaagt cgttcgattg gtagcggaga    1080
caccgcggtt gatatagttg gacagttcgc tcggctccaa ttctattctt tgtccagggc    1140
tgccatagcc tctgcgttgc gcttgctctt gaggtgagca tggccatctg cgaataggca    1200
ggagcaaaga gagagtccat ccgaatacct cgttcagttc gcgaatggct gcgacggtat    1260
cctgctcgcc cagcctatcg cgctgagagc tatatgtgct tgcttgcttt tggggtagaa    1320
tttagcagtt cggctacccc ttcccgtgct tcggcatagc gtttgctgtc gggagcactc    1380
cggtcagatt caccagcatg ccctcatcgt tcggcatcag cccaatccgc gacggtagtc    1440
ctgaatggct gaatcgattt tgcccagatt tgccgtgcca cgccccgaag aagatatgct    1500
ttggggatga gcgcattgcc tgcaggcagg ccgaagcatc ggcttccgcc cctgtatagt    1560
cttccagatg attttggcta ttccccgata gaaataaggt tccgccatcc acgggcgagg    1620
cctaccactt ggttgaagta cccgatgctc accacgtagt cgttgagtag agagcattgc    1680
gcccgatcgt gatcacccga tcgacgtcta tctgccccga gctgtggcca cggagagcag    1740
gagcaggagg aagaataagg agcgttgaat gtcataatca gagccgggga gaaatggatt    1800
tgactacggc ttacgttttt tgccggtcgg agctgtcact acgcggtacg aagtccgtac    1860
ttgcctttga tgatatggnt accgag                                         1886
```

(2) INFORMATION FOR SEQ ID NO:1230

    (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1273 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1273

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1230

```
ggcgaacgcc tcgatgcaag tgacaagaaa gtttacgaag aaaaggtagc gatgctcgcg    60
aagtatcgat caaggatgcc aaaaagggac ggcgactcag aaagagaccc gctcgagtga   120
ggatacctcc agccctgtca cctcttactg ctgcctgcag gagtagccct tgtggtgata   180
atcctgatac tcttcccatt gccaagcgca gaaaagggaa agaatgagag aagtcctgct   240
gactaagcct tattggctac gctcaagtat ctgttcgagg agggagtaca taatccctcc   300
tcgtccgttg cttgcatgcg gcggtctacg cggctttcat cgcctcgtac acggactgac   360
gcagcacgtc agccggatgg aagtcgagac cccctgtact cgcccgaagc cctgcgcaat   420
gtctctctgg ccgtcatggt gatctgctgt acgtcgtata tatatgtacg caccggccct   480
cctccttccg ttgtaccgca cctgggtgcg ccatctgccc ccgctcctgt tcttccccac   540
ctcttctatc tgcgtctgag tctgttctac gtcctgccgg gttattcatc gttggagttt   600
ccatcgtgat ggccctcata gtggcagccc tgagtatacg gctccctatc tgtggagagc   660
actcggactc aagcgagaag ccttgcagaa ccacttgttc tactttcgct ctgcaccttt   720
gtcttcgtca ttgcaccgga gtattgcacc ccgactccgc ggtgcgaaca gccggcatca   780
ctacgactgg tggcaggcgc tctatctctt cctgatcgtc ttggcaggtg cctgatcggc   840
tattttgccc ctcgcttgtg ggctataatc agaagaaaaa acactgaaaa aaataatcat   900
cgaatcggac cggatcctca tcccacgccg accactcact aacaatactt tcccaatgaa   960
cttcttgtcc aacgtcatgt ttgggtctcc aacggcctgt tggtaccggt agtcgccgga  1020
ctcatctatt cttcatcaaa tcccttctcc tcctcggcac cctcttcggc acgtggcaag  1080
ctaccgccgc cggcaggaga ccttcgcctg catcatcgaa aacaaagcgg cctcgacacc  1140
gaagccctca gagccgaagc ggccaaacgc ccccacctcc gttcgaaaat gtgctggccg  1200
aagtcctcga tgcagattcc gcccgcgcaa tctgctcatc ggtcggtacg aactctctcg  1260
tgaacagcgt ctg                                                      1273
```

(2) INFORMATION FOR SEQ ID NO:1231

       (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 540 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:

(A) NAME/KEY: misc_feature
              (B) LOCATION 1...540

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1231

ggctgccttg tcgccattca tatctccggc aacaattacg atatctgctt tttcggtttg   60
gctttcccgt tcttccttgc tgctcaggtc gggatggtat atattgggta ctgcgaggca   120
agattgtttg gtttatagga aatgcccttt gttgcttttc acatggggca ccatcgacac   180
ttatataccg ctgcatgaaa gataaaagag tcctcgattc cgcagtcgcg tatcaaggtg   240
atgactataa cgtcaaggga ttcgattttc gtgctcacaa ttcagagaat cccatcctat   300
tctcaaatat atcaaaggaa gtggagccga tatcgtatgc ttgaagaggc agtactgagt   360
cggaaaagca actctcgtta tgtggggcta cgactttcaa gaaatatctt cccgaatatc   420
gctacatgga actggtcgca tctcgagaag atagaaaagg cagcggcctt atgctcctgt   480
ccaaatatnc atctcggatg tgcaccgcat tccataccga gtccgcattc atggcttcaa   540
540

(2) INFORMATION FOR SEQ ID NO:1232

        (i) SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 704 base pairs
              (B) TYPE: nucleic acid
              (C) STRANDEDNESS: double
              (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
              (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION 1...704

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1232

atccccttac gtggaccata cttgccacct ttttggctgt attgtcatac tcttttataa   60
gagatacaag gagaaccaag ctcgccgtcc tgtggtgaac ctgaggcccc ggctattccg   120
gcttatgacc gagctattgc agccttgaat cattacgtgc aaaaaaactg gtggaagccg   180
gtttgtataa ggaatattta cggaattgac cgatttgctt cggagctata ttgccgaaac   240
tcgcgaatag atgccaggga gatgaccagc agcgagatat tacaagctct tcagggatcg   300
aacttcctga aaaggaagt cgcctgctgc atggaatatt gcaacggccg acctggccaa   360
gtttgccaag tataaaccga tacatggaga ggtgtggaag ctattcgaga tgctcgcgcc   420
tttctcgatg aggtgcataa ttccgggagt catgacattt gcatatcctg aattgctttg   480
gctgctgatc tgctgccttt gatagcgact tggtatatcc tgcaagcacg taagacttcg   540
caacgatgac catatcttca ttgaagccct ttgaaggaag tcgccgagtt tgagggtcta   600
tctgcgccat tcgttgccga tattgagagc tctttcgtcg gttttctcat tattgctttg   660
gctcgtccgc agaataccaa tagctgcaga aagattcgat cgag   704

(2) INFORMATION FOR SEQ ID NO:1233

        (i) SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 1106 base pairs
              (B) TYPE: nucleic acid
              (C) STRANDEDNESS: double
              (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...1106

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1233

```
attttggggc tgaacgacat gtcgctttca ctcactttta tagggcctgc cactgaaatt      60
cgggatcatt gtcgacaaag ttcgacaaga aaccgatacg ctttttcccc cttgtttatt     120
catttcgaat accacaccca ttagcggcag gcattgtgac ccatggattc agaggtgcta     180
cccaatgaga gatccacttg tcaattttct tctctccatc ttgactgaag agtaagtttt     240
tattgaattt tgccctccat tcagagagaa cacatagtcc acaaaactta tttttgcgta     300
ttgttgaagc cggtgtaagc gaaagccaaa gcaaaagggt tgcaccattg ttaagagaag     360
aaggcgaacg atagttggag gctatatcca cacgtacaac tgcacattgg agaagtcttc     420
cttatacacg agtttcgcat ttgcgcgttg gcatcgcgac tgaagaccgc aactctactc     480
ttatatcctc gggcttattc atgagctcta ccgaccaaat cttgatgtcg gattcattct     540
acccgttacc acgatatcga agtcttgaaa ctgataatca tccgatggtc ccaatccctc     600
aacttttggt atgtggcacc ttggtctttg gagcggagat cttcacattg ctattgccgg     660
tgtcgtatcc actgtgggtc attacaagat ccatccgttg tccgccacac tcatcctcgt     720
ttgtaccagt ttttctgatt gtactggacc accttgacat catctcctcc catcgtctgc     780
gcttggcgag aggacagagg gttgcgacgg cgaaagccgc caccacgaat ttggtaaaac     840
ttttgtcttc atagtttttg tctttttttt gagactcaat cgacaggagc cctccagtct     900
cttgaattgt tgattagcga ttagtttgtt acttgatttt cacgagagca cgatggctca     960
tgattctctc ttcaccgttt cgttccttgt ttttactttt tactgattgt attatcgttc    1020
acccatggca agagtgtcca aaatcgaaat cggcaattcg cacaacgcgg aatgcatgtc    1080
ggccttctca tgccacaaag gaacgg                                         1106
```

(2) INFORMATION FOR SEQ ID NO:1234

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 989 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...989

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1234

```
cgtcgccgtc atgctttgat gggagagcgt atcggtatgg atgtactcat accatatacg      60
acgtatgtaa ggctctgatt gacaattatg cagaagccat gatttcgaag gcttcaagga     120
agatctgatg cgtgcactcg cgatagatct cctatcacgc aagaaatatt cagaggtaag     180
```

```
aaagcagaag agctgacgat atgctttcg atgaagctta caagtctttc caacgtaaga    240
tggattgatc gcagaagtgg cccaccctgt ggttcatcag gtattcgaga cccagccgcc    300
gtgtacgagc gcattctaat ccccattacg gatggtaaac gtgctataac ataggatgca    360
atttgcgtga agcggatgaa actcaaggga aagcatcatc aaagaatttg agaaagctat    420
cgtactgcat actatcgatg atcttggaaa gaacatctgc gtgagatgga cgagcttcgt    480
aattccgttc gaatgccagc tacgaaaaca aagatccact acttatctat aaactcgaac    540
ttacgaactg ttccgcaaga tggtagaagc catgaaccgt aagaccgtgc gatcctaatg    600
cgtgctcgga taccggtacc ggaggctcct tcccaagaga gctggaacac aggcggcaaa    660
tagaaatccg acatgcagcc gaacaagtac ggacatgagt aagtatcgga cacaaaaaga    720
cgatatagaa gcccacagaa agcacaaagg gatgcggcaa gcagacctca gggtgcagct    780
gctcccagac accgataaga aacgagaata agatcgggcg aaacgatcct tgtcttgcgg    840
tagtggcaaa aagttcaaac agtgccacgg gcgtaacctg taaaagattt atgagagaat    900
caccgactat ggtatagaat agtctgngat ttctttttat ttttctctc tacccgcata     960
taaaaaagac tatgatccta ctatgaccg                                       989
```

(2) INFORMATION FOR SEQ ID NO:1235

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 837 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...837

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1235

```
gcgatttatt ttgtggggtg caattcatgg agtggcactg gccgtacaca actctggtgc     60
gagatctttc cgtcgaatcg ggctatgtcc acggatatcc tttttggcgc agatggctcg    120
gacggatcat tactttccat ctcgtctttt gggttggatc ttcttccgat ccgattcgat    180
ggcggtggcc ggacagttct tggacaaata ttcaacgact tccatcccga agttttcttc    240
caattattgc cggctacaag ggcgttgtcg tactgatggt cataggttac ctgtgcattt    300
tgtcggtaag ggtaagcgaa acagggcgca atccatgctt gaggtgctcc gttcgtcttg    360
caaactctga tgctcgttct cctgatcttc atatcattca ggtacgcagc tcggaaatac    420
agcccttcat atatttccag tctaaatatt cttactgcgg tctcctttca tctaagtgaa    480
cgataaggat tgcctgttag gactctataa gttcggcaat cttccaaaat gagactgttc    540
atgggagttt gattgagctc ttttgctgca gagctgattc ttagtgtctc gggaaaggtc    600
aaacctccgg tatatgggca ccgagcaaat agaaattccc caggtttcca ttagagaagt    660
actcctttcc tcgtcaaata ggcgagaata agaaacgatt gtcagccgtt tcttgctccc    720
tgcatgatgc aggaccgatt gtcggctgtt tcttgctccc tgcatgatgc aggacgcgat    780
tgtcgctgtt tcttgctccc tgcatgatgc aggacgcgat tgtcggctgt ttctgct       837
```

(2) INFORMATION FOR SEQ ID NO:1236

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2566 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
  (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
  (A) NAME/KEY: misc_feature
  (B) LOCATION 1...2566

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1236

```
ccaatagctg agcagcatca gctgaaagat gatgcgcagt gcccaagtga tcgagaagga    60
gagcgataat agagcaatgc gaatatgcct gttcctacag tatttccacc cgattgagaa   120
gcagtgtgtc ggcgtcgggc atggtgggcg cataataagg aggatgatcc ccgtgatgat   180
gacgtaaagc aaagccacac ctctgtgagg atcagtagcc gattggcata ggcttgccct   240
acggtgcaga gatcgtcact gctttcctcc gctgtttctg ctgtcgtttc atgaggttga   300
gactggtggc gtatatagag gtcttcgatg ataccatctg ccatcctacg ataggagcaa   360
tgatggtttt ggctccggta atgtccgcca cccaaggaaa atctctgctg ccgggatgat   420
tacatccgcg cggtcgggtt taggtggaag cgtaccattc gttcttcggt tgaaatgggc   480
ttgagcaggt gtatgtcttg tgcagtgctt ctaccggcat gatgctatag cgagaagacc   540
cctgtccgat ccgctcagac ggacaaggcg attgatattg cctcccgtcc gataatcgtg   600
atgtcggtat attctttgt aatggccatg agttccggcg gaatgcttct cgaacatagg   660
ggcgaacctt ttcgctgagc agacgtccgt accgatgtcg aacgactgcg aatgcttgat   720
atgggtatcg gagaaagtgt aagctcggta ctacctccac cgacgtccag atagatgtaa   780
ttgctccgtc ggaaataatc tgttcgatat gattgtccga aacgaggcgt gcccctcatc   840
tccatcaatg atgtctatat ggatacctgt tttctctcgg attgtgcgat cacggcttcg   900
gcattcgatg catctctcat ggcggaggtg gacaggcgcg atagtccttt acccgatata   960
tctgcatcat ctcatagtat cccgcatgag ccgtaccatg ttgtctgtct tttcctctcc  1020
tatgtatcct tggtaaaaga gtcttcgccc agacgaatgg gaactcgcat gatcagcact  1080
tgctgagagg ctcctccatt ccttcgctat tgacacattt gatcagtggc gcacagcatt  1140
cgagccgacg tctatggcgg cataatgtac cttttcattc tttaacgctt agtcaggcaa  1200
agatagtcgt tagcattcat tcccaatcca tccctccgca tggtataaag tcaaacgaaa  1260
agggctgcgc gaacggagtc tctcctcctc gcacagcccc gtttcatatt tcgctaaagg  1320
ggtagcgacg cggtttgatg tcgagcttga ccggcttgat catattctcc gggagagtat  1380
cgtatccaga tcctctttcg acaggatgtc gtgttccaaa agaggtcgta aacgccacgt  1440
cccgtttcca tcgcttcctt ggcgatcttg tcgaattctt atagccgatg atcggattca  1500
gagccgtaac gataccgatc tgttgcggat atacccacgg cattcgtcct cgttggccgt  1560
gatgccatga tacagagtgt acgcagcgta tcgaatccgt tcatgagcag atccgaattt  1620
cgaagcagca ttgtgccatc acaggctcca tagcgttcag ctccattggg ctgcatcgcc  1680
tgccatcgtt acggtcaggt cgttgcccat cacctatagc agatctgatt cattacttcc  1740
ggaatcacag gattcacctt acccgcatga tggacgaacc cggctgcatg gcaggcagat  1800
tgaattcgtg caaccgcaac gaggaccgct ggcaaggaga cgcaggtcgt tgcaaatctt  1860
gtcaccttca cacagatacg gcgcaaggca gacgaatatc ctaccatcac gaagtgtcgc  1920
tcgttgcccc taccagatcg gcactgagac gaatgtccca ccggtgactt cacgaagagc  1980
ctctatgcag tattcggcat agttcggctg gcgcagatac ccgtgccgat agccgtagca  2040
cccatattca cggtcaggac tcttcggcgg caaagtccag atttttgatt tcatcctgca  2100
agatggagca aatccgccga acgtctgtcc cagagacata ggcacagcat cttcgactga  2160
gtacgtccca tcttgagtac atgggcaaat tcgcggctct tggcagcagc gactcgatga  2220
gatccagaag atgggggcgg aacttcagat atgtgcgtaa aggccgaggt ggatagctgt  2280
cggataagca tcgttggtgc tctcgagcag ttcacgtgat cattggggga gaggtgggca  2340
aattcgcctg cccgtgtccc atgatctgca aggcacggtt gcaaatcacc tcgttggcgt  2400
tatattcgtg gtcgttcctg caccgccttg gatcatatcc acggggaaat ctcgtggtgc  2460
ttgccttcga ggatttcctt gcaggctttc acgatgccgc tttctgggca tcggtcaaga  2520
gaccgagccg atgattggcc actgcagcgc ccatttcgtc atggcc            2566
```

(2) INFORMATION FOR SEQ ID NO:1237

(i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 903 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...903

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1237

cttcgatgat gcttggagtc ctctcagatc actgcgtaga tggtagcgtc tctttgcatc   60
cctgctgcgg gctatcaata tcgaacctat cctcgttcga tgcccggcca tatgttcgtc   120
ggttattaca cggatatatc caaaaaaaaa aaacattcct ggagacaacg atgatcggtg   180
atgtcgattt ggacgatttt tccctgatga gcagttggat tcgacgatga taggcaaatc   240
ccaaatcaga tgtccaagct gactttcgag aagtcgaaag aatatgccaa caagaatatc   300
aggaaaacga agctgacatt cactccggca agtcgggcta tatttcttgg aaatatccaa   360
agacgtgcga aggcgaatcc aatccatcgg cagtagcatc gcttttgccg catcgtcctt   420
ttgaaataag aatacgccgg atgctatgtg gcttacggct atgcaggctc tcagtacacc   480
tttctgacat aaaaagtgtg ccgaaaacgc tgctgaagcg attttcgaca caccctcatc   540
cttatgctta tatgaaaagc cgcactgcgg atagcgtaaa ctccgaaaac aagatttgag   600
gattccacca cctttgtaat ccgctgtgca aagcaaccga aaggtgcggc ccgccatcag   660
cgatgaaatt gtcctcggaa tagttgtatg atgagtttcc ccgatctaac agtgcggctt   720
attcctcgtc ttctcgtatt gcaaagttag caacattgtt tagatttgca attctttgtt   780
tcatgatttt gggtatggtt acactttcgg atcctaatcg gcgttctcga cgttcaaacg   840
tattacgata gttcggttgc ttaggtaatc tgctttgacg atggggaagt tttctccggt   900
ttg   903

(2) INFORMATION FOR SEQ ID NO:1238

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1107 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1107

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1238

```
atgctatcat gaaagcattg tcgatacgca atttccaagt gcgcgactaa tgacagggct          60
gaagatgtat tcgacgagga aggtttttnga cattataccg agatccggat gacggatgcc         120
cgcagtaagg gggtggatac gaccggccat ttgccggcag tggggatttg cttcgggagc         180
tactccattt tatattcatt gatccgtttc tcccgtagta atccaataac atcaacccaa         240
taaaaaggat agttttctc gaactaaaag tcgcaaaaac aacgaatagc aattgctgta          300
cgaatgtaaa ctttgactaa ctttgcaaaa gcattttttc aaacataatc aacaagaaaa         360
ttagaaatga aaactcctgc agaactgaag tatctaagga tcatgagtgg gctcgccaag         420
aaggcgacgt tgtcttcatc gtatcacgga ctatgctcaa ggcgaattgg gcgaaattgt         480
ctatgtggac ttactaccga aggcgaaacg ctcgaggctg atgaggtttt cggatcgatg         540
aagctgtgaa gactgtttcc gacctgatga tgcctatcgc cggcgaggat tggaagtgaa         600
ccctgatctg gaagagcaac ccgaactcgt aaacagcatc cctacggtgc cggttggatt         660
atcaaggtta aggctgcaaa tgctgcgact tcgacaacct cctgagtgct gccgaatacg         720
aaaaactgat agctcataaa tgcagccttt ggtaagcatc atcatgggta gtacttccga         780
tctgccatta tggagaaagc cgccaaaatg ctcgatgaaa tgcagattcc attgagatgt         840
tggcgctttc ggctcaatcg actccggctg aagtagagac tttgcacacg aggccagagc         900
tcgcggtatc aaggtaatta tcgctgctgc cgtatggcag cttcatttgt gtggcgtaat         960
tgcttccatg acgtctattc ggtaataggt gtacccatca atgccactct tgacggaatg        1020
gatgctctgt agccatcgtt caaatgcctt ccgggatccc cgttgctact gtggggataa        1080
tgctgccaga atgcagcact tttggcc                                            1107
```

(2) INFORMATION FOR SEQ ID NO:1239

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2740 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...2740

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1239

```
cgaaaaggta gagataaaga ggccgtgagc ttccttgggt aagacttatt ttcagcacac          60
ccaaagcggt agtttctgag aaaagtaccg gagtatctaa gagggttttt tgtcgattgg         120
ggggaggaga tgtttgcctg tttggcatct cttcccttc tccacaatgc acttatgccg          180
gacagatact tcggttattc aatttaggca tttcactacg accatccctt aggaatgggc         240
gagcgctgaa gggtaagaaa tggtatgaga gatgctgcct actcgaagcg cgcctatat         300
ctgcctcttc gatgatactg acgatgagct tgccgtccgg cgttaggtgg agtcgttcga         360
agcaaaagct cggccaagag atcgctggcc tctctgctgt cggtgtcttg ccacaaggga         420
tggcttgata ctcggctatt tggtggcaat cagttcgagc atttgttcat gcgatgatct         480
gccatcttcg gtgtagtatg gatgacatcc cgcacgacat ctgccgcaca gtctatgatt         540
gtacaggtgc tgccagcagc gaataggaag agacaccgag gggcgacaat cgaacccgac         600
agattggagt tcgtccacag ctgccttcac ggcagaacat ccgacggatt gaattcgagg         660
agttcgggga agagaagttg ttgctgtcga tatgacgtct tgattcgtcg gccatgaaac         720
gatcgtaaag aataccttgt gtgcgcggtg gaaatcgacc aaagccaaac ccctactcag         780
agtatcacca gataacggcc gcgatggaca tagcagagca tatcggtgga ggggtcgcag         840
atacggcaga gggagtaaaa tcggtcgagg cgaacagctc ttcgagcgga tcggtggttc         900
tgccatcttc tcggcatctc gcttggcttc gactgcttga agagttcgtt ccagcccata         960
tccggcgatt gacgccgcga ctgcggatag gctccgtcag tccggtttct ttgaagggat        1020
```

```
tatacgatga tccagatcta cgggcggacg aactacgttt ttccccgggc cttgatagca        1080
gggatgtcga tcagttcttt gcggtcgaag tcaatggccg gtactgcttg ctggagctga        1140
gtgcttcacg aatgaccaca ccgatgagtt tgaaaaagcc tgttcgtcgg agaacttgat        1200
ttcagttttg gtcgggtgga tattgcatcg atctgggagg gttcaagatc gaaatacagg        1260
aagtaattgg gcatgttccc tgaggaatga tcgcctcata ggcagccatc acggctttgt        1320
ggagtaagga tgacgcatga agcgtccgtt cacgaagaag tattgcaggg cactcgtttg        1380
cgagcaccat cggggcgccc tacgaagccg gatatattgg tatggggctt ttcatcccga        1440
tgggtatcag atctttctcc attctcttcc gaatacatcg aggattcttt tcttcagagg        1500
agaaggaggc agatcctgcc cagctcaccc gaatggtaga tagaaaaagc gacttgcgga        1560
ttgaccaagc cacccgttcg tattcggtca ggatgtgccg aaattccgtt tcattcgttt        1620
gaggaatttt cgacgtgccg gtacattgta gaagaggttc ttcacaaaag aatacagccc        1680
agtggagagg tgacagtagc cacttcgcct acttcgagcc attgatggta aggcgcgtac        1740
ccaattcatc ttcagccctt cgggtaggag ttccacttgt gcaacggctg caatcgaagc        1800
cagggcttca cctgaaaacc catcgtccga aggctgaaca gatcctgaaa agaagctatc        1860
ttgaagtggc atgtcgctcg aaagccattc gggcatcgct ttggctcatg ccttgccgtt        1920
gtctgtgacg cgtatcaatt cgcgaccggc ctccctgaca ccagcctgat aatggaagcg        1980
ccggcatcca atgcgttttc caatagctct tgacgaccga ggccggacgt tggattactt        2040
caccggcagc aatttgatgg cgatactgtc cggcaggagg cgtatgacgt cgctcataag        2100
atgacctaaa aaccaaccac gatagcaaac aaacggctat gagcaaagcc aacgtaggag        2160
tgttcgtccc gagcgagtgg attgtgtctc gccttgcagc tgtcgtcctt cagatgctgg        2220
gtaccttcca caaatgttcc gcgtatacga gggcatagcc ggagtagtcg tgtgatgaag        2280
actgtccgtc cagctctgct tgccctcctg ttctacttcg cgtctaatgc gttcgatacg        2340
tttctccaac tctcgcgtcg ctgatcgtaa tagataggtt tgtggtcaaa agaccggggc        2400
tacgctgttt atagaatgat cctaatccca tagttttct ctattaaaga gaatggagtg        2460
aagaaaagat cgaagaagcc ttcctctttg gtgtccgtat aggtcgggca atataaggag        2520
agagccggtc tgtaggatcg gtagcctctt gccggctgca ggtgtcggag gaatggagtc        2580
ggtctgtagg gcagcgatgt caatgagtct tttctctcct cttcggccag agcccgtgta        2640
tgcacgaggg ctgccaaagc accgctnaag cgtcgcaaat cggacagcga tccgagcacc        2700
tgcaaagacg gaatcccggc tggcctgcgg aaaagatcct                              2740
```

(2) INFORMATION FOR SEQ ID NO:1240

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 881 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...881

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1240

```
tccaggacgg atacgccgca tagctcccaa ccatgcctct gtgctgatcc ggccgaagag         60
cggtacgggc aaagagttga tagccgaagc tctgcacctg ggagcaaacg agcctcagcc        120
ccattcgtca aggtcaattt gggtgggttc ccgaaagttt gttcgaaagt gagctgttcg        180
gacataagaa aggagcttta ccaatgcttt ttccgacagg aaaggacggt tcgagctggc        240
tgatgcggca cgatctttct ggacgaaata ggcgaactac cggtcggcaa ccaataaaac        300
tgctgcgagt gctacaggaa cagacattcg agccgttggg cgaagcgtct cccaccgagt        360
ggacatccgt gtggtatcgg ctacgaatgc ttcttggagc gaatggtagc cgaaggacgt        420
ttcagagagg acctctacta tgaatcaacc tgatacatct gcatctgcct ccgctgcgtg        480
```

```
agcgtcagga gatatacagc tgctggtgga agccttcagt gaagcctttg cccaatcgac    540
ggattgcccc atgccgtttg gagtgcggaa gctatgcgac gtatctgtcc atgcccctac    600
cgggcaatgt acgcgaactg aaaaacgtag tggagcgacg ctattgctct cgggatcgag    660
agaaatcagt gcccgggatg tggctgcttc ggttcgcagg tgacggcagc agaccactcc    720
gacgaacggg ctttgccgac atggaggaag ctgctatccg agagacgctg actaaataca    780
acggaacgtt agtcgtgctg cacgagcctt gggattgagc cggcaagctc tttccggcga    840
atggagaaat acggactgtg atagtgtgta aaacagaatc g                        881
```

(2) INFORMATION FOR SEQ ID NO:1241

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 447 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...447

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1241

```
agcagcatca cctgctgtcc gtgctcggta atgtctgtga taaactcacc gtatcggcat    60
cgtaaacagc cgtcccgcag gggacttcta tgatacgacc tctccgttcg ctccggtact    120
tcgcttggct ccgccgctct gtccgttgta gccatgatat gacggtcata gcgcagatgc    180
agcagtgtcc aataatccga ttgccacgga gaaagacatg tccgccacgg cctccgtcgc    240
ctccgccggg ccacctttgg ggatatactt ctccctgcgg aagtgcgtag agccctccct    300
cccttgcccg aacggcagta tatcttgacg taatcgacga aatggactct gctgccatac    360
gatggattta gttagagact ttgcggaact tgccacaatg ggagcgatac gcaaagcgat    420
ctcttctatc gtccccgtac caccacg                                        447
```

(2) INFORMATION FOR SEQ ID NO:1242

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 596 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...596

```
aggatcccca gcctcaagcc caagaaagga cgcttcctga gcaaagaaag cgagccgaag      60
agtgggagag cggtaaggag cggttccgag accttgagct tggtcgcaca gtgctgctcg     120
tcggatagag gatgcttttg tcggaatgag tatgcaagtt gggaaaataa gaagaaaatc     180
gagcagctgt tgcaggtctc tccctttggg aaacctttga gagcaagctg aaagtcaagg     240
cagacagata aatattgcca aactgaaaaa ggaaatnctc gaagccaaag aacaccctat     300
cacgacttca agtcgtggca gaagttcgag cgcgaactgc gcctgtcaag aatcaggata     360
ttatcacttg gatgatgtgc agggatctca tgaagagaac aaggtggagg gattggatac     420
cggtactctc tacctgaaag aattcggacc gacgtccaag agcaggggag cctcaatgtg     480
ctgaaccacg gaaagccgat gcgctttgcc cgtggtcgtg tacagaagcc gacaggccga     540
ggccatgtac acaaggagga ggcttcctct ggcgacggtc tatatcgaga aaggga        596
```

(2) INFORMATION FOR SEQ ID NO:1243

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 710 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...710

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1243

```
tgatcctcag atgatcagag tttgtttccg tatggcttga aaatgaaaac aaaaccaggg      60
aaaattattt tattccatca gcgaagtggc gcggatgtcg atctgccgga ttccactctg     120
cgtttttggg agaaggagtt tccggcataa agccacgtac ttccgaaggc ggcacacgtc     180
gctatacagc caaggaatcg aaatggtgcg gctcatccac caccttacca aggaaaaagg     240
actcaacttg caggcacgaa gcaagctctc aagaacgact atgatggtac tacggcaggg     300
aagaagtcat cagtcgtctg aaagaaatcc gtcaggaact atggatatcc gtgatgccat     360
cgaccaatgg gagcggaaaa atatgtactg aagaaaaacg atgctgcgat ggatcccgaa     420
ttcgatcttc ttctgaaagc cggaaaagca gcggactctc tgtcggtatg aaagacgatg     480
agctcttagc ctgcttgaga gttgttcata cagagtggaa cggctgaaag ccgaagagca     540
tatgctatcg gtggagacaa gctccaagac ctgcgaatcg tgggtgtagt gagattcgtg     600
ctgagatggt ggggccttcc ggcaagcaga ttctgatgat actttggcgg tcggacgcat     660
cttggctccg gcccttcttt tgcttcgaga atattttacc cgttaccctg             710
```

(2) INFORMATION FOR SEQ ID NO:1244

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 712 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...712

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1244

```
gccgttctac ggcaaggaag cgtaagtatg tcaccagccg gcatattcag accgtctgat       60
gcgagaactg gacaagaatc tggctctttc gtgtggagcc accgataacg ccgacagctg      120
gctcgtattc gggcgtggcg tactgcactt tccgttctta tcgagaccat gcgccgcgag      180
gggtacgaac ttcaaggggg cagccccaag tgatcatcaa agagatagac ggcgagcggt      240
gcgaacgata gagcttcttt cgatcaatct gccggaagag tcctccagtc gtatatagac      300
atagtgaccc gtcgcaaggg agagatggtg atgatggaaa acagaacgac cgggtgttta      360
tggagttcca tatcccttca cgagggatca tcgactcaac aatgccgtac tgacagcatc      420
ggcaggagag gccgtaatcg ccaccgcttc ttggaattcc aaccgtggaa aggggagata      480
gagcggcgca caacgggtcg atcattgcgc tcgaaagcgg aacggcctat gcctatgcct      540
gaataatctc caaaagccgt ggacgcttct tcatctctta cgcaggagag gtctatgccg      600
gtcaggtcgt aaggcgagca cacgaaagga agggcgactt ctgcgttcaa cgtctgcaag      660
agcaaaaagc ttaccaatat gcgtgcttcg gtagccgatg ataagtgtca ct             712
```


(2) INFORMATION FOR SEQ ID NO:1245

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 595 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...595

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1245

```
cctatcgagc atttgcagaa tcccattgac aagtatgcat cgcagcttaa tctgccgatg       60
ggaaggtgtt cggttcttat gcccacagcg gtgacaatgg atatatacca gatacaacga      120
gatttcaccc gatctgatca aggctctatc gctacggagg atgtccgctt ccgtaagcat      180
tcgggaatag acagcaaggt ctgttccgag ccgtggtcaa acgcggtatc ctcaatcaaa      240
aaagcgtgga ggggggtagta ccattaccca gcaactggcc aaactccttt attcccgcgc      300
acggagacca aactcggacg cctcttccaa aaaccgatcg agtggttatc gccgtgaagc      360
tggagcgttt ttatacgaag gaagagatca tcccatgtat ctcaactact tcgacttcct      420
gtacaatgcc gttgggatca atctgcggct ttatacctac ttcggtaaag cagccggctg      480
atttgaagat gaggaggcag ccgttctggt cggtatgtgc aagaatccgg cctattatat      540
cccggtttgc atggggggaga cagaacgttg ccgaggacgc cgcaatatgt tctgg          595
```

(2) INFORMATION FOR SEQ ID NO:1246

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 622 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...622

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1246

```
cggagcatcg tggttagtcg tgttgttggc gtatgccagg gcaggtgggc tgtagtactt      60
ccggccaaca ttcccatcag cgtaagataa ttgatcttta tcctttgcaa gcgataaatc     120
cgatgataag gagaggcagg agggtgatat aaaaccgtat ccgatccatg taaaaccacc     180
tttgtttact atcgtacgac gaaccccctct ccggcccccca atcctacgca agccaagaat   240
atggtatgcc gatttctctc aacatcaaat tggcactggg agtcgtataa gtcacagctt     300
ataccgataa ccgaaccgac tcaatagaat agccaccacc aatggccacc agcaagtccc     360
agcttgacgg gctgaggaat accgggcaaa acatcggaag cgaacccaaa aggataccga     420
gaccgatgcc gatgaatatg gcattaggtt cggttcgttc agtcgtttga caagaattac     480
cgatcagttc tccactttgg gcattactaa ctcactgccc actacagtca gacgatcgcc     540
acctgtagcg gaaggaagcc aatgctacca tctcaacttc ggcacggtca cacgtgtcac     600
attcatgcca tgcattttgc gt                                               622
```

(2) INFORMATION FOR SEQ ID NO:1247

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 542 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...542

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1247

```
ggaaaattct tccgattctc gaccctgaaa atagattttt tggaaagctt tgaataatat      60
gtctcaacct atcaatgact tataaagggt cggttgggat accettagtt agaagggtgg     120
agacaactcc cattttttgag ccaaatcgat acaaatgttg ggaataccct tagttagaag     180
```

```
ggtggagaca actacacatc tttagtaatt tctttagtaa tgttgggaat acccttagtt      240
agaaggtgga gacaacgttg tcccaagcct gaacggtagc gttgtcgttg ggaaacccctt      300
agttagaagg gtggagacaa caaacgcatc gttataagtt ttttgattgc gttgggaata      360
cccttagtta gaagggtgga gacaacgttg tccaagcctg aacggtagcg ttgtcgttgg      420
gaataccctt agttagaagg gggagacaac aaacgcatcg ttataagttg ctgtgattgc      480
gttgggaata ccttagttag aagggtggag acaacacctt tgcttgcaca tcctcaggac      540
ag                                                                      542
```

(2) INFORMATION FOR SEQ ID NO:1248

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 565 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...565

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1248

```
cgctcttcta taaaatgcgt gatgtccatt cctttcagat tctgttcttc ccgatacgga      60
acaaacgctc cacctcgcga tccagacgat gaccgatcgc tccagcagga tatgcgtatc      120
ggacatattg cgcggatgct gtccgacgag gtaatttcgt cgaagatgcc atccacattg      180
gtcagattga aattgcgcaa atggacaagc acttggcacg ccagttgctg cggcgtatca      240
tcggaggacg aaagtcagac cgctctttcc ggtagtgctg tagcgcaagt gtccatgtag      300
cactctccgg catacggtat ctgagaggca gcaaattcgg catgcccagc tcttctcgag      360
aataagcctg aaaatccttg tgtaccgagt cgatatctcc gagatggcat ttgccccaag      420
tgctcttttct ctgaagaggt atcttctccg ggacggctgt tgagcttcac cacagcgagc      480
ccggcaccttt ctgacctcga ttgtgctgct tctccatcag gaggtatagc ttgntcangc      540
atacatccat gtgccatact tatcg                                            565
```

(2) INFORMATION FOR SEQ ID NO:1249

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 872 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:

```
              (A) NAME/KEY: misc_feature
              (B) LOCATION 1...872

         (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1249

ggatctttca accccatctg tatagtcgta cggcagactt ttatcaggat ttgccagaag      60
cctttccatg ttggatgagg tggtttattt ggacattttc cggcacgaga actcccttg      120
ccaggtgtga ccagtcgtct gatattgatt tgatcgagaa tcccaataaa acgctggtga     180
gcaaaaacga tctgctgatt atttacacgg caacgagata cccgatgtcg tattgatact     240
cggagcggcg atatcgatcg gttagtgatt cctgncaaac aatatctcca aacttatgct     300
aaagaaggtt ctttatatac tggggttctt tcttgtactg gccatcttgt tgcagccata     360
gttttctttt cggactattc cgatagcact cgtgctcagg tttggaagtt cgagtcgagg     420
gtaagacgaa acatgcattc agcaaaagac cgatgtggag cgagacttga agcgtctggg     480
tttcaccccc atggcaagct gctcgactct atcgatcttc acagaatgga aagaaacctc     540
gtgctaattc ccttttccgc ggagcggaat tgtatgcctc tccatccgcc aactgtatct     600
gacagtggaa caaaaagatc cgctctttat ggtagtagat ccgatacctc tttctatgtt     660
tctaccgaca ggagcgtgat cgttccaact tgcagtatgc tgcccccgta ctgatggcct     720
caggggatat atctcgtcct tagctaccgg ccctctcttc gacctcattg catttatcaa     780
gcgagatcca ttctggncaa acttttcgc tcaaggttat gtgcccggat aatgncagaa      840
catattaagt tccccgtctg ggcnaaactg ga                                    872


(2) INFORMATION FOR SEQ ID NO:1250

         (i) SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 544 base pairs
              (B) TYPE: nucleic acid
              (C) STRANDEDNESS: double
              (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

       (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
              (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION 1...544

         (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1250

agatcatacc ggatataaat gccgttggat gtggcctaaa gttcgctatg cttcggttta      60
catggtgaaa attcttacct gaaagtgccg actaaagggg tgtatatcaa ggataccata     120
tcgtaggtgc tgtattcggt ataggaaccc gctcaatgac agacgttcgt tcgtaaatgt     180
ctctcttgaa tatgacgatt gatcccgaag gagggtatga tcaaagaaaa tgctctgaaa     240
ttgacttcgg cctcacgttc aacgagtcat ggtttaaaaa gctgaaactg aactacagaa     300
ggaaaaatgt tgaacattaa aagaataaag aagaaaatga atgaagaaat ttgtttgcaa     360
cggcagcact gcttttttacc gcaagcacag ccttgctcag accggagtcc aaacaaatac    420
cccattcggt agtggagaag aagcatccgt tgccgtcaaa acataagtct ctttacctct     480
tatgcgaaaa gggtaattac aaggatgcct atgattttttg ggagaaagcc tatgaggagg    540
cccc                                                                   544


(2) INFORMATION FOR SEQ ID NO:1251

         (i) SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 1553 base pairs
              (B) TYPE: nucleic acid
```

```
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1553

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1251
```

```
ggtgccaacc tcccacagag attgaagacg gcactatcat aggaggcttg cacaccatca      60
ggtattgagc atcgccgaca aagtagtgga ggctgtcaca gtggagcgat ccgcaagttt     120
gtagtgatga gcggttgtga cggccggaga gtgggcgcaa ttattacacg gagtttgccg     180
aagctcttcc cttccgtacg gttatcctta catcgggatg cgccaagttc cgatacaaca     240
aattgagctt ggcgacattg ggggcatccc tcgcgttctc gatgccggac agtgaatgac     300
agttattcgc tggcggtaat tgccctgaag ctgaaagaag taagggattg gatgacatca     360
acaaactacc gatcgtctac aacattgcat ggacgaacag aaagctgtca tcgtcctgct     420
cgctctactc agcctcggtg taagaacatc catgtaggcc ctaccctacc tgcattccta     480
tcaccgaatg agcgaaagtg ctgatcgaaa acttcggtat agcaggtatc ggtacggtca     540
agaagatatt cggacgctga tcgcataaga ataagaagtg gtgtgcaatg aataccttaa     600
gctttctcgg aaaagccgga actgcattgg tttattctcc atcttcttga ggtatagaca     660
caaaagtatt aaatactctg tgaaaacttt gtaagctttt cacagagtac ttagaaccat     720
ttcgatgaat agttaaacta tttcgcggaa agcttaagag cttttgccag aatagatcct     780
aatcttcttc gaaaagtggc taatcaaacg tgagttcgat gtaagcgata tgggccgact     840
ctctcttgtt gggatattga ctataatcga atcagaaaat gaagggaaaa agtttgacgt     900
ctcatcggat gtcgaagcct ctcgaagctg aatttctcaa ccgagaaatg aaatacgctg     960
acaaacagca tattgcatat ttcttcagat cgaatccgca ttgttttata gccattcgga    1020
acatacgcca aagggggtcg agctacgccc tacagcgact cgggctacgc cgtagagcta    1080
ccgagctgcg ctctacggct cttcaagcta cgctgtaggg ctcaccggcc gggccctacg    1140
gctcagctcg gccacatcta cggctcacgg agcggactct acggctcggc tcgctacgct    1200
gtagagcgta cctcgccgag ctctaagcgt agctcgaaga gccgtatggg atagcccgtt    1260
atcctctacg gaatccgcca tctgccttgt ggtatagccc atcttccggt gcggactgca    1320
acatcggtca aaagcaatcc gaatttcaat gttggtccga tccgggcaga agaggattgc    1380
cccctataca attgcctgaa cggaacaacc tataactccc agatcttagt gtgtaacccg    1440
ctaatcgggg aacgaataca ttggcgtttc tacgccgaac tgacgttaat caatgncgca    1500
agggacatca gcaaaaaata accccgaagg ttttgctgaa ctttcgggat ctc           1553
```

```
(2) INFORMATION FOR SEQ ID NO:1252

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 1618 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
```

```
(ix) FEATURE:
      (A) NAME/KEY: misc_feature
      (B) LOCATION 1...1618

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1252

gccgtcagtg atattgattt ttccatccct tcagggcaaa cctatgcgcg gtcggaactt      60
ccggagggggg taagaccact atagcccgac tcatacctgc ttttgggacg ctacccaagg     120
ccatatacgt atcggtggag tggatgtagg gatatggcaa aagaagagct gatggacagg      180
atctctttcg tctttcgaat accaaacttt tcagaaccac cattcgtgag aatattacct      240
atggcgtccg gatgcatccg aggatgcttt ggctcgtgcc atcgaccttt ctcaagccgt      300
gaaattatag agcgtttgcc cgatggactg caaacgaaga tagagccgat ggcacgtatc      360
tctccggagg ggagcagcag cgcatagctt tgctcgtgcc atactcaagg atgctcctat      420
tgtggtgctc gatgaagcca cgcctttgct gatcccgaaa acgagaaatt gatacagcag      480
gctttgcacg actgacgaaa ggaaagacgg tgctgatgat tgctcatcga ctgacgagct      540
acagcatgtg gatcgtatcc ttgtgataga gaagggacga atcgcagaca gggtacccac      600
gaagaactcc tgacacaagg tggtctttac aaatccagtg ggaggaatac cagcgatccg      660
tttcttggac attatgaaag aagaaaacac acaattacct ctaatcgaaa cgaaacaaac      720
ctatgatacg atattccaac accgattcgc tctctctcgt aagggtgcgc aggatcttgc      780
caaagcattg catggactac ggttttgaat gtcggattta tgttgcctgc catttcactt      840
ttcttttcct cgaagactat ctgcaaggat ccgccacaca tgtatttggt attatatagc      900
catgggagcg gcttttatgg cggtgctctt cttatagctc tcttccaata cacaagcctg      960
tacaccaaga tatatacaga agtgccaacc gncgcatcgc cttggctgaa aaactacgca     1020
aactcccatg gctttcttcg gagagaagaa tctgtccgat ctgacttcca cgatgatgag     1080
gatagtacgg tgatggagac tgtcttctct cacagtatac cccagctttt gcatcgttgg     1140
tcagtctctt tttgatcggt atagggctct tctgcttaat tggcagcttt cgttggcact     1200
cttttggggtt gtgcctgtag cagcctagca attgtctttt ccaaaaagat gttgaacaaa     1260
tcattccact cgaataccat gtcaaacgag aggtcaccga gcatatacag gaaggaatcg     1320
aaggatacag gagataaaat catataatgg cgaagaagaa tttgccgagc gctcgatgcc     1380
aaactccatg cctatgagaa gagccttatt cgatgtgaac tgttgtcggt gccgtcctta     1440
atgcttcaca tataatcctc aaactgggac tgcctctgta atcataatgg gagcttatct     1500
cttgtcagaa ggaacaatta tctattcact tatttagtct ttctgcttat tcggatcgac     1560
atatataacc catagtgaag tattcagcaa ttgctactct gcagtacctc gatgtacg       1618


(2) INFORMATION FOR SEQ ID NO:1253

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 512 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...512

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1253

atctcatcaa tcaaaacata gtatttcctg cccatatctt ttgtttgctc atgatatagt      60
cgtataggag attgggatta cgatacttga tatccgattt ctatcaagag ctacctccac     120
gaaatcttct ttttgagctc cttcctcatc aatcgattct taaagagagt gaagagtagg     180
```

```
aatgactttc ctgaactctt aatcccgtaa caatcttcac cttaccattc catcgctttg    240
cgaatactgt gcaatgtatt catttctgtc tattatcata aataaggtct cttgtgattt    300
ctctgaaatt ttagtcgtgt attacaactg ttttgtcagt gcaagatatt tttttgcttc    360
gaactaacaa aaaaaataga ggaacaaatc tatacgatgc ttttgatgta gccgaggatt    420
ttgcgaatac atttcaaaac actttgaggt ggggaagaaa cggaaaatta ccgtctttca    480
aaatcgggaa cggcgttatt ttccggtaga ag                                  512
```

(2) INFORMATION FOR SEQ ID NO:1254

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 478 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...478

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1254

```
gcgaaagtaa ccattgccaa ggtgaaaccg atagccgtgg atattgcatg acgaagctct    60
ggagcagggt ataatccttc tggataacca aaatagccca ccgagcacac agcagttcgt    120
cgtaatcaag ggcaagaata cacccaggcc tgatagaggg gaggagatac tttcttgagt    180
atgatctcca ccatctcacc aaggcggcaa tgaccaaaat aaatgcaatg gtctgcataa    240
agcccatccg aaacgatcca aaacgaactt ctgaatcagg aaggtaacca aggtgccagt    300
gccaatacga atgtcacggc tgcacccata ccgattgagg tgttaccttc ttcgatacgc    360
ctaagaatgg gcatataccg aggaactgcg acgcacgacg ttattaacga aaaccggcgc    420
tatgaataac atgaaaatt cataatgatg ccaattactt aaagtgagtt atgctttt      478
```

(2) INFORMATION FOR SEQ ID NO:1255

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 585 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...585

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1255

```
ctgaagaatt gtaccatgtc tgccacnttt ccgttggatg ttcgctcgga acaaaagcca      60
gattcacttt cttcttcggc ccgctcaaat acaatatgta cgcgcttacg acaaagggat     120
gaaagccgag gacaacctcg atctcgacac ttggtctact tgggtgccag tatcttccga     180
tggatcaatc gttatagatc attccggcct ccacattcct gcagcagtat tttagcaact     240
ggggtgatc attcttttgc tcacgctggg gatcaaactc ctcatctctc ctctgcttac     300
aaggggtatc tctcctctgc caaaatgcga ttgctacggc cgcggtacaa gagatcaatg     360
ccaagtaccc gggcanggat caggaatcca tgtgaagcgg cagtctgcta ccatgaatct     420
ctatcgtgcg gccggtgcag gccgatgagt gggtgcttgc ctatgctctt ngcagttccc     480
tttcctcata ccatgtacat gtatttccct acgactatcg acattcgtag cagagtttct     540
ctgggcggaa gacctctcct ctatgatgct ggtttcagct ggacg                     585
```

(2) INFORMATION FOR SEQ ID NO:1256

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1050 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1050

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1256

```
cctatataga gatagagacc ttctcttttt tcaaaggtct ccttaaagtt aatgatccgc      60
cgagcaattg cacttggaac cggaatgtgc aagtatcttc attcatttgt attgcggtac     120
gaatacatta cctttgcgcg caaaaataaa cccccatcaa ccagaaggat gaaaaactta     180
gtcatcgtag agtctcggca aaagccaaaa cgataggacg tttcctcggt tcggattata     240
cagtatctcg agttacggac acatccgcga cctcaagccc aataaattca gtgtgatata     300
caaaacaact acgagccgga atacgagatc cctgccgata aactccggta gtcaaggaac     360
tgaaatccca agccgaccga tcggatttca tcggctggct tccgatgagg atcgcgaagg     420
agaggccatc gcatggcatt ttacgaagca ttagggctga aaaacaaaca gaccaagcga     480
attgtatttc cgaaatcacc gagacagcca tcagagctgc tatcgaaaat ccacgagatt     540
agacatcaat ctggtcgatg cccaacaggc gaggcgcgtc ctcgaccgat cgtcggcttc     600
gaactttctc ccgttttatg gagacgtatt cgtcctttct ttcggcaggg cgtgtacagt     660
ccgttgcact gcgtcttatc gttgaggaga gcgtgagata aatgctttcg tgccggaagc     720
atccttccgc tgtacataga gttcgtcctt cccgacggta gaatgctgac ggcggaattg     780
cagaacgatt caagacgaag gaggaagccc gatatttctt ggagcaatgt atgatgccca     840
ctttcatata acagacgtta cgaagcgtcc gggcaaacgt tcccggccac tccttttact     900
acctcgacgc tccagcagga agcagcccga aactcggcta cggtgtggca cagaccatgc     960
gtatcgctca gaagttgtac aagaaggctt atcacctatt gcgtacagac tctgtgaatc    1020
tgtcggatag gcnctcgtgc actcaaaaga                                      1050
```

(2) INFORMATION FOR SEQ ID NO:1257

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1167 base pairs
        (B) TYPE: nucleic acid

```
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1167

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1257
```

```
ctccacgccg ttgtacatga tcgggtcgat gcgcgtcata ccgatattcg catcacgcga      60
agatgagtca gatattcctg tccgaacgtc atccaaaacg agcgcgcttg atcgtcggga     120
aattcttcac gagtgattcc agttcctatg atagaggaga taggactcgc gctcaccgat     180
actcggatag gtcagctctt gtgtatttcc tgcggttcgg tctctatcca acggccgttc     240
tcccatactt acccttctga gtgatctcac ggatgttgat ttcgggattg aagtcgtggc     300
aaacgccttg tggtggtcgc caccattgca gtccacaata tcggataatg aatctcatcg     360
aaatgatgct tggccgcata agccgtatat acctcgtcac acccggatcg aagccgcaac     420
ccaggatagc agtcaggccg gcttgcgaaa acgatcctga taagcccact gccaactgta     480
ttcatacttg cttcgtcgag aggctcgtag ttggccgtat cgagatagtt caccccacac     540
gcagacaggc atccatgatc gtcagatcct gatagggaag tgctacgtga tcaccaattc     600
cggtttgaaa ctctcgaaca gagccaccag ttcttcccat tgtcggcatc gacctgagcg     660
gtttggatcc ggacgttttt gatttcgacg caatcttgtc gcacttgctt ctcgtgcggc     720
tggctaacat gatctcgtga atacatcggt gttcatagcc accttcttgg ccacaacggt     780
acctcaccgc cggccccgat aatgaggact ttacccattt ttatatgatt cttgtatgat     840
tattactcgc ctgtagcgca aagataaaga gaacaggcca acaatcggca aaaagattcc     900
gcccccactc acccggcccc cctaaagcgt aagatgcatc tcatgcagga tcggcctacg     960
caccaaaatc ttcttacatg cacgccataa aacgtggtgc gtaaactttt ttgttttggt    1020
tcgggaagta aaaattctcg cgccacaacg aaaaagttct cgcaccactt cgttcagaaa    1080
cacgcgccac aatcagatca tttgcggttc gtatttccga caaaactatc cggactaaaa    1140
ggaagttaag tagtcatgtt acacggc                                       1167
```

```
(2) INFORMATION FOR SEQ ID NO:1258

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 453 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...453

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1258
```

```
gtgaagagcc gagcgaagaa gatgaagcag ttcagactga agaaaatctt tatgccaaag        60
tgctaaaatg attttataag agagagagga tattcatctg gcagtacttt tgcactaatg       120
gggaattacc aacagatgta attgcatttg tgttgacaaa aaaagaaaac gacatgagga       180
agttattttt aatagctgct tagaaatgtt tatgttcggc tgtctcctat tctcaaaagt       240
aactcaacga taataatatg agtttgggac aaatacacga actgcaagtg catatttttc       300
gcaaattcca aaggatttgc tggaaaatat ggataaaatg ggctggacaa ttcgtcaata       360
ctcaatgaat atgaggggag atattttaat ttattttcaa tatagaccct caggttttta       420
atcttgtcgg gaaaaaagtc gctttttgggg aag                                   453
```

(2) INFORMATION FOR SEQ ID NO:1259

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1008 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1008

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1259

```
ctacgatgct cggcgccacc ctgctaaagg cctataaact ctacaaggag gcggaataga        60
aattttcaga gaacacatga ccgtgctcct cgtgggcata ttgtggcctt catcgtagca       120
ctggccgcga tcaagttctt tatcggatcc tcacccgata tggcttcaag gcattcggct       180
attatcgtat cttggtggcg gtctgcttat cgtattgatg ctctcagggg tatccttagc       240
tgtctaatcg gaaaaatgaa acaaataaat cgtccgctcc acctgcgcga gggaaagtac       300
tatacttcga caaacctctc acatggactt cgttcgactt ggtaataaat tccgctatcg       360
ggcttgtcgt cggatgggta tcaagaagtt gccgtagggc atgccggcac attggatcca       420
ttggcatcgg gcgtgatgat ctgtgcacgg gacgtgccac gaagcaaatc gatgtgctgc       480
aggccggcac aaagagtaca ttgccgccat cagactgggt gctacgacac cgagtttcgc       540
aaggaaacgg aaccggatgc tttcttcccg tacgaacata tcacgcgcaa tcgatcctgg       600
acatactacc tcgattcacg ggaacgatag aacaggtccg cccatattct ctgctgttcg       660
cgtgaacggg aaacgcgcat acgattggct cgaaagggga aagaggtgga gatgaaaacc       720
cgtacgttgc agatcacgag atcgaactac tggagtatgc cctacccctc atcacgctac       780
ggatgtatgc agcaaaggca cttatatacg tgctctggct cgtgacattg ccaagccctc       840
gaatcgggag gacatttgga ggcattgcgc aggacaagag tagcaatgcg cgtatcgaag       900
actgcctttc gatggatgag ttggaacaat gttcgaccgt cttggttttg cttatgaacc       960
ggagttcgaa caaaaagagg caatccgtct tccacaccta caaataaa                   1008
```

(2) INFORMATION FOR SEQ ID NO:1260

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 699 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
     (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
     (A) NAME/KEY: misc_feature
     (B) LOCATION 1...699

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1260

```
taaaatgatg atgacagact gttttcgcc ggctgcagtg gctccaaagc ttaccgtcac      60
tcactttctg tggaatgatg acttctcaat cggtttcaat tcgatggggg taggttggat     120
ctaccctcta ttcgaagggt acacacactt cttgtcgaag taaaacatct tgcctccagt     180
tggatctacc ctctatcgaa gggtacacac aaccatagac gtaaggcata cccgtttcga     240
tctgtggatc taccctctat tcgaagggta cacacaacat aagactatat cttaataacc     300
aaattctgtt ggatctaccc tctattcgaa gggtacacac aaccaagggt cgggttcttg     360
accttacctc cagttggatc taccctctat tcaagggtac acacaactat aaaggtttgt     420
tcaaggaatg tgctaccgtt gatctaccct ctattcgaag ggtacacaca acgatgcgga     480
caacgtccct tactccgtct tgttggatct accctctatt cgaagggtac acacaacagc     540
gattagctcg tccgccgaca cgtcttgttg gatctaccct ctattcgagg gtacacacaa     600
catgattctt gattggtggc ttgggcgttg gaaatgtcag tagtgtgggg attcttcctc     660
gttggggctt tttcgctaaa tttgcagcgg acgaggtgc                           699
```


(2) INFORMATION FOR SEQ ID NO:1261

       (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 964 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: double
           (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
           (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
           (A) NAME/KEY: misc_feature
           (B) LOCATION 1...964

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1261

```
cgtcgaggct gtttcggtgt agtatcggac atgtcaagag acgtatttga ggttaggagt      60
atgtgcttga gccggcgaag gagcagtagc ggcagcaagc gaagatgacg aaagcgagga     120
tattggtcca agcatatttc agggaaatcc atcaagggca cttgtcacat aagagagata     180
gtagtgcctc aacggaatag cgcgctggcg gactgcatga cagtcggcat accgagagcg     240
ggaaagaggc tccgcatatg gagaaagaga taatgcccca tagggaagca aagcaagtcc     300
caatctcatc gtcgggaggg tgacgaacat cagtacgcca aaacctgaca agcgaggatg     360
aagagataca tgactatcag catcggcaag aaccgccatt gatcgggtag gagaggaagc     420
catacagata tacgtctata aggtgccgat gagcatgaat gccacggttt ggggtagcag     480
cttgcccaaa gggcgatgga catactgccg ccggccgtct ccatccattc tcgagctgtg     540
atctcttgat ctccatggct atgctacaca ctgtgaccat gaagatgaca gacccagtac     600
gccgggtatc atgatattgc tcaggtagat ggagtagtga gccacggatt gcctatgggg     660
```

```
tgcgtgtcga taacgatcgg ctgtagcagt ccatggcctg gctttcggtg gctcctcggg      720
cataaagttg cgaacagcgg ctgcaccggc taccagttcg ctgatcatct tgttgtccct      780
gaagggagcg agccacccac catataggca tagttggtat agaaggagag cttggcttgc      840
ttctgtgcgt aggcatcccg tgtcattccc tcgggtatat agagtaaccg tatatctcgc      900
ctcgctgact gccagccgag ccttacgcac gtttcgaact gttgaccatt tgggttgctt      960
ccat                                                                   964
```

(2) INFORMATION FOR SEQ ID NO:1262

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1173 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1173

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1262

```
ggggtattcg tcaatccggt ggtctctccg gcggtagctc cgtcgacact tattcgcttt       60
tcactcatgg ctacgcatac gaaggagcaa ctcgacttgc catcgaaaag ctgcataagg      120
tattcaagca gaacggtgtc ctgtaaggta attaatgata acagcgtgtt gcggacacgc      180
tcctttggag gaggatgtaa tgaatacaac gataatagga gtagcaggcg gaagtgcttc      240
cggcagagta cattggtgaa aaagctctgt gaggctttcg tcgaagaaga tgtgttgtac      300
tctgtcacga ttactattac aaggccaatg accacctctc cctgaggaaa gaaagaagct      360
gaactacgac catcccaatg ctttcgacac ggtatgttcg tcagggatat tctctctctg      420
aaggcaggca aaacgataga ggtccggtct attctttcgt agagcacaat cgtttgcaag      480
aaaaagtaac gttcgtcctg ccaaagtgat cgtactggat ggaatcctga tattcgagac      540
aaagagctgc gggatctgat gaatgtgaaa gtattcgtcg ataccgatcg gatattcgat      600
tggcgcgccg ccttgtgcgc gatgtccagg aacggggcgc aatatggatt cggtattggc      660
acaatacttc agtacggttc ggcctagcac gaggattttg tggaaccatc caagcggtac      720
gccgatctga tcattcggaa ggtggattca attcggtggc gctctcactc cttgtcgaaa      780
aaatcgatcg gtgattcgta aggaagaata acagccggat actccgatct ttcctcaaaa      840
ccaaaacctt aatgcgatta aaaccaaggc tttctttcca aacagcattc ctgtattgtg      900
gtggatagct gccatcgtat ctgccattac gaagctgctc cgcacaggca caataactat      960
accatattcc gctcctcttt tatcatttct cccgacatca gtcgctctat tcggcctatc     1020
cggcagagct cacgatgttt ttctctacgg ccctgtcttc tctatccttt tcgccccttt     1080
gcccttttgc cttctttcat agggatgctg ctgtggctgt gcttttcgtt gccggatgcc     1140
tttgggctgt cagccaatta cccacgagcg aaa                                  1173
```

(2) INFORMATION FOR SEQ ID NO:1263

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1426 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1426

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1263

```
cccgtagcgt acgcatcgtg atatagcggc cataggggtt ttgcagaccc gaaaatgttt      60
tcttcgagcg tcctgtccca cagttgtaag gcaaaggccg tgttacgtcg ccatacttct     120
ctcgagcttc ctctacccct gtacgataat gttataggca gcataaaggg gatagagacc     180
gctcttggag ttgatcccaa aatgatgctt ttggggtgga atacctcatt cgttataccc     240
tgatgtcgat gtagcgaggc aatgcaatgg gagtagagaa gtcttcgctc ataagcagta     300
gccacctatg ctgtccccga gatgcatgtt caccacacgc caagagtcag tactgtttct     360
ttgtcggggt tgcggaaagt agagaagata gagcaatacg ccctatacgc tcctcgatgg     420
tgaacttatc cgccatacga gcatctcacg gatgcgcttc cccgcctcac gaaatatgtc     480
ggggtcgtag aacgcttgaa gcgacgaaag accgccttgg taacgccgcg aggcataaat     540
cctgccaaga ctgctcatcg acgagattgg caaaattgtc aatggtcact ccttatcctc     600
atccttcatt tcagccccat agagcatcag aggcatggga tggatatgcc tcggaggata     660
gaaatagcct ctcggcgttg gtcgccttgg ctttcagttc gtccagtcgt tttttctctt     720
cgggtgttag gccttctttt tcctcttctc cagtcgctct ttctcctcgt attgctcatg     780
ggtggacctt ggtgattgat atctatgtca ccggactttg ccatcgcctt ggtttgccaa     840
tgataccttt gagttcgtcg aagtcgtgca gctctacctc ggaagtttga gtagctcgtc     900
attatagagt gccccattct caaagccatc cgcaccactt tttctatttg tgcgcgcttg     960
agctgtccga gcatcgtatt acatcgtaag gcttcatccg gctgccttct atagagatga    1020
tgggacagag ttgagaaaat cccccaacag cttgcgatca ctctcgctct gtttgcctct    1080
ttgtatgata ccttggcagc ctcggcaagg acacggaggg tgcggtcgga gcaaagtcga    1140
aggcataaca ctctgtcttc atgtacccat tgtgggataa ggcgtttgta cgcggaagat    1200
agtttgcata tagccggatg cggagtacta tatgaaccgg ccatcatgaa gacgccggtc    1260
caaggcttaa tgctacaccg gtagtcagtc gtccgcatga gagggtgatt gtataagtct    1320
catcgggtct ttgccgatgg cttgattgac taactcaagg gcatctctgc ttcctcctcc    1380
tcatcatctc cgtcccccgg ccacattggc caccttaaag aaccga                   1426
```


(2) INFORMATION FOR SEQ ID NO:1264

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 2670 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
           (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
           (A) NAME/KEY: misc_feature
           (B) LOCATION 1...2670

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1264

```
gtggaggatt tgttgtctta tataggaagt atcagctatc cgaacagcaa gcgaagcatc        60
tggtcgggat ggcgcagatg ctttgctctg attttggaga gtggtaccgg acgaggtgtc       120
ggaactaacc aaactgcccg gcgtaggcgt aagacagcca acgtgatagc ctccgtcgtc       180
tacggcaaac cggccaggcc gtagatacgc acgtattcag agtatcagaa aggataggcc       240
tgaccccggt tcgaagtctc cgttagagac ggagcgagag ctggttcgct atatccggat       300
gtgctgatac cgaaagctca tcactggctg atcctgcatg gacgtacgtt tgtctggctc       360
gcaagcccaa atgtgcagac tgtggcatag cacattctgc cgctactact cgaaagtttt       420
taagaagaac agtacagccc tccgaaaaaa ggggaatgat aaggcctgtt gtgcaaataa       480
tatccgcaca atgctccata ccttaattcc ggaggcaata tgaatcgaga aagctttttc       540
tcctgcttgg tctcttattt gctctcccgc tccatctgca aagcatcgct ccatgcaaca       600
acatggcaga tacgacttgt atatccgatt cggccaaatg tttcctcctg ccatcggtgt       660
ttaccatgta aaaccgatga aaaacaattg cggcattccc tgcctcttgt agctgcttct       720
ctccttactt tcaactggat gacaatatcc gagagcttcg ctttaccggt gccgggagct       780
ttcaaccaag atagacaacg tcagtcagct cgttcctctt atggcacagc tttgatgagg       840
ggattcggct ataagggacg cagcaaatca tggggaaaaa tgttgtgtcg gatgccttgg       900
gtatggcact tatgggtgga atggtcaatg cggaaaatat tcgttcggac ggttgcgtcc       960
ggatggaact gctgccaatt atacccatca ggacatacgg caacagcttt cgcctgcgcc      1020
acactttta tctcgaatac ggctcccgaa gcccttggta tagcgcggca ggctatacgt      1080
agcctccctt acggggatca gccgtatcgt gaacaatcgg cattgggcag cgatgtgctt      1140
tgcggagctg ccgtagggat attggtcgga gaattagcta ttggatcagc gatctgatct      1200
tccgcgatcc tacgggctac aactaaagct gaccaagaaa caggaaggaa ctctggagag      1260
catggtcatt tctcttctac cgggaataga tacatcaacc ggcagatgga ctttgaaggc      1320
aagcagtaga acgtaccgac gctttcggca tgaacctgaa gacgaccttc aaccgagctt      1380
tgctcgctgg gtacgaatcg gatcgcaatt cagcgtttcg aagagaagca gaaagtcctt      1440
acgcgagaaa ggccggcaaa agttttcgta ctccggcgat ctcactcgga ctttctgccg      1500
gtgtagaatg gcatccatgc agagagcatc cgtctgggca gagatcctgc cctcaatact      1560
gtttcgtaag actttaccaa tgcccaagac gagccggacg aaatgtcttc gaaattaacc      1620
gacgctcgag tttccaaccg gcgttccaag tgggagtagc atacaggtat ccgatcacat      1680
gggtatagaa gctcatgcag ggtatcagct tggcgggcag tataccatct tatggaggaa      1740
acatccactt ggtcgatcat caaaagagag ctaccgtacc ttaccgggga tttgagtttg      1800
cagtcggact acattctatc ctttccgctg acgatcgagt ggaaatggct gtacagagtt      1860
caaagcggtg agcacatcgg gcacctcgcg caagcgaacg atcctctttc cccggactga      1920
cgaatctcgc accgacgtgt gtgcgctgcg atatattcca caacatgcca aagacttcgc      1980
tctgatagta agggctgtct ttccttgcca ccagatggaa actcatctgg tccccacgca      2040
atacgatctt ctctatacga gcgaacggcc gaggcgtcgc aggcgaggta cccgtatcaa      2100
ctcctctcct ccggcggaat tttaccgaaa cgatcctgca tacggcgccg gaatgctcga      2160
gctcctcgtc cgtggagaga ttgtccaact cccgataaag aagaagcgtt ccgaatccaa      2220
cggcacatat tcttcgggga aggaaagttc caaacgctct cgaccgttgt ctccactaca      2280
aaccgggaag ctgaaggaat agctcttggc tctctgcata aagatcggca aactcatccg      2340
ctttgagttc ggaacggctt cattaaaaac cttactatac gtctcatatc ccaaatcggc      2400
atgaatccgc tctgctcggc accgagtaca ttgccggcac cacgtatatc aaatcctgaa      2460
gagcaatgcg aataccgctg ccgaggtcgc tgaagttctt atggcttgga gccgacggcg      2520
cgaatcgtcg ctcaggacac tgagcggcga ctcaaaagat agcaaaaggc tttcctgttg      2580
ctccgtccca cacgttccga agctggtgca actnactcag accgtatcgg tgggcattcg      2640
tcaatgtaat ggtattggca ttgggcacat                                       2670
```

(2) INFORMATION FOR SEQ ID NO:1265

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 792 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

```
        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...792

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1265

tggcgagccg atcncggnag agaatatcgg taagcgagtt gctgccgatt cgataccggc      60
cttcaccgca ggaatgcttc tgtactgaac acgctgggtg tgtactcaaa ggactgttcg     120
tcctcgtagg aataggtctt atccttgtgt cgttttcggt cttttcggcc ttatattaga     180
gctgtttgca gacggtacgt ggcacatgct cctttgactt cggactggat ttctattcct     240
tcttgatgat actctgtgcc acgatctccg tatttattat agtagccgtc ccggtatggc     300
catcgttttc agacatcaag ggcaggggag aaacgggatt attctgcagg tctcaaatgg     360
ctgggcttga ccatttggct tgctgccgct gtctattggc cgtagtcttc atattgataa     420
cccgtgaact gggtttgaat tcttcctcca tcgccattca gtatgatgtc agaaatgcct     480
aaaaaacatt aggttccttt taggacaatc catagtaaag gtttttgcgt ttttgttcaa     540
tcttcgtttt agaatcttgc cttttgaaaa agaataacat cagctattat agtatgagcg     600
ataattgtca tttgactgag aaatcatttc gaagtgtgtc ctcccgaagg attccgtcct     660
gactttattt ttccgaattt gtctccaaac tggtattgga tactcctttc tattgtcctt     720
ttcgccggat ggggttggtg aagtataaga gggccggcat ggctcccagc acctattta     780
cgacgtaatg gc                                                        792


(2) INFORMATION FOR SEQ ID NO:1266

        (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 630 base pairs
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: double
             (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...630

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1266

ttattcaaaa agttcctcat tttcggacag atgctgttct tgacttgcta atagtgttct      60
tctcactccc ttattgacag atcattcgcg tgatctccct cgaataggga ggtaaccaag     120
cagtactacg taccggagga aagacttggg gcgatgaact gaccgatctg cttttttagcc    180
ggccggatag tgggcacagc tactcgaccg gttgttccta ctccttgaaa aaattgccga     240
aagcagctct ttcagccagc cgattcggag tatgaccaat cggaggagac caatatatgg     300
agttggagca gatctatcac tatcgcaata tgctgaacag gctagaggac tggtcgaatc     360
ctatgccatg gatatgtcag ttcgttctgc agtcttctgt tgcaaggatt ggtatccgga     420
gtgagcatcc cattcgaggg aaacctctgg tcggcctgca aatcatggga atagatcaaa     480
cgcgatcttt gatttcaaac atctgatcat tctctctgtc aacgagggta aactcccatg     540
cgtgtctatg aaacgacaat gataccctac acattgcgca gagggtatga cttcggtcaa     600
tgaggtaaac gaagccactc aatctatgat                                      630


(2) INFORMATION FOR SEQ ID NO:1267
```

(i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 891 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...891

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1267

```
aatgaaaact gcagaagttc atcaggatca gacgatattt caattgctta tcatgagtgt    60
gtgattgtag ttattacgga agactgaaaa gaaaaagcct tcgacggcac cgaatcccga   120
atcgaaaggc ttatccccaa ttattgtgca tgtatcagtt gtcggtataa gtcatactgt   180
aaacgccgat acgcgcgtct tatttttttt tccgagctgt agtttgacgc cggacgggaa   240
catgaattat tcagctggga ggtgtacagc gaattggaag ctcccgcaac ctgagcttca   300
caggcagcag tacgagaaca aggtccttgg tgatataagg cttccctcgg gagtcttctc   360
cgtattgttc ttgatatgct ccatcagcag gcactgatat tgctaaaccg atactcccgt   420
ttcttaatgt tgtatatggt cataggaatg ccgtgcgagg ctgcatcagc tcggtctgtt   480
cttgctcgaa aagtttctca ccgaatcctg cggcaagagc aacaagtagg agggcggacc   540
agcatcaagc cctcagatgg cttcgaagca ctgatattga actgtgctca ccgatttgcc   600
aagccaaaga ggaagacaga ttgctcgtga aagcatcgta aactgctctt tactgattgt   660
cagttgcgtc atcacccctg ccggaccttc acacaagtga gagaatcatt ctcctgcaac   720
aggtgggata tttggagttc ttgatatgat tgacctgata ggattcgctc gtgtttacga   780
atgttctgta gctgttgtgg tggaatcggc cgtaaccttg tagctatnga agaggccatc   840
tgcgtattgt cacgctgagc acaactcccg tacccgtcgt cgagtcacat a            891
```

(2) INFORMATION FOR SEQ ID NO:1268

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 353 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...353

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1268

```
tgcgatgtga aattcgattc cccatggttg atggttttta ctatatttgc ggccaagaat      60
gctcctatcg agagtataaa actctttgct aaaagtgcta taggattgat atagaacgat     120
attgacaaac agtttacgac caaataaaat gaatatgcca catatactcc ccggctcatc     180
aggccggttc catcccccg tatccgtcat accgccccgc cttgttcgga caaagcaaga      240
atatcctatg acaaataaag aagaataacg cttccatagc ctcctcaaag agtcaggcac     300
ccatcgagtt ccctatagaa ctggtgggtg cctttgtttt atccctcccg aat           353
```

(2) INFORMATION FOR SEQ ID NO:1269

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 968 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...968

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1269

```
cgatccggca gccggatcgg tgctggccat agccgaagct ctgaccaatt cgtctttgct      60
ccgcttcgta atggtatcga gggtgtgagc ctgtcggcaa ctggatgtgg ccctgccgta     120
acgaaggcga agatgcccgt ctgtacctgc cgtggaagcc tgttcggact ttgccgtcga     180
tctgggcatc aacatcctac cggcaaggac tctctgtcca tgacacagaa atatgaggac     240
aaaaagtgct gagtcccggt acggtgatta tcagtgccgc agccgaagtg acagcattcg     300
tcgcatcgtc agccccgtcc tcagccatat agccgctacc gcttctacta tatcgatttc     360
agcttctgcc cgttctcatt gggaggatcg gctttgccca gagcttgggt actatcggtg     420
atgaagtccc cactgtacgt gtccggaata cttccgcgat gcgttcaata ccgtacagga     480
actcattgac agggtctggt tctggccgga cacgacatat ccgcaggcgg tctgattacg     540
ctcttctgga aatgtgcttt gccaatgtag taggcggtct ggaggtggat tggataacct     600
cgtggaagac gacctgatca aagtcctctt tgccgaaacc cgggtatcct cattcaggta     660
aaggaccgca aagccgttga taagatctga ccgatgccgg catcggtttc ctcccgatag     720
ccaagccgac ccaaggcgac acctcttgat acataaagac ggagccgaat acctgttcgg     780
tatcaccaca tgcgcgacgt ttggtatgag tcgtcctacc tgctggactg cttcagagtg     840
gcaatacctt ggccggcaac cgcttcgaga actataagga acaccggtcg tatatcactt     900
cccaagcaat ttacgggtga tctgaagcga tggattggat cccgatcgaa agacggcatt     960
cggcattc                                                             968
```

(2) INFORMATION FOR SEQ ID NO:1270

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 725 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...725

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1270

```
ccattgtgta atctccccct tccatcacat gcttttgccc atccacgatc gcatcttgtg      60
atcgagattg cagtcaaggg tgtccctcat actaaagagg catcgaagaa aggtgctgtt     120
ctgaaaagca aacgagatct gaatccttat cctgtttttc aaacgatagt gaagcatcgc     180
cggcacgtgg catcaggccc cccacttata gtagattgta tagctgaggc attctccggt     240
cctgcgaaat cgttggagat gggttgctga gcttgcaatg atatagaggt gatgttatga     300
tgtatagagt cgtgaggatg atgactatgc agttgaatgg attcgtttct tgcttatatt     360
ntgttttgct ttcatttctc cttttctttt ctccaatgat tcaaatatag gcaataagcg     420
gttagtagaa ataaaaggag gagcctgtgc cagacctcct cctcaaaaac gaatagactc     480
tttagtagtt ttgggtgtaa atactcccaa agttattttt tattcgaatt atagatttcc     540
tgagtttttc gattagcttt tcaccacgaa gatctcgctc tataataggc cgtcaggacc     600
caacagtatg acttgcggaa taccttgnat gccatactat ccgtagccac attcttagca     660
tcgatatctg aggccatacc acgttggact tctttgcttc agtgatcttc atttatccaa     720
actac                                                                 725
```

(2) INFORMATION FOR SEQ ID NO:1271

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 648 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...648

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1271

```
gcgcaatgta tcgttcacgg ccaaacaagg agaagtcaca gccctcgtcg tccgtcgggt      60
ggaggaaaga gcacatcggc caagttggct gcacgctttg ggatatagat ggaggaaaga     120
tcttttttggg aggggaagac atttcgcaat cgaacccgaa accctgctac gtcattatgc     180
catcgtcttc caagattact gctcttcaat gcatcggtgg ccgataatat ccgcataggt     240
aaaccgatgc tacagatgaa gagctcaaac gtgtagctng gttggcaaga tgcgcgaatt     300
tgtagatcgt ctgccgaatg gatatgacac tttgatcggt gaaatggtga gaacctttca     360
ggaggtgaac gtcagcgcat ttctatagcc aggctttact caaggatgct ccgattgtgc     420
tgctggatga agctacggca atctcgatgt tgagaatgag acactgatac aggccggtat     480
atccgaactg tcaaaaacaa gacagtcctc attatcgctc atcgtatgcg cactgtagca     540
atgcccataa gattgttgta ctcaaagaag ggactgtagc cgaatgtgca gtccgccgaa     600
ttgatggcca tgaacggtgt gttgctcgaa tggtggcggc gcagaagt                  648
```

(2) INFORMATION FOR SEQ ID NO:1272

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 821 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...821

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1272

```
cacgctatgg ccatagactc gcgagaagac tttggtctga cggntccgca atgcaacgat      60
ccgtatgatc agcgtggcat agccgatcag cagcagcagg agcttaagaa accctgctct     120
tcgcccacgg tacagaagat aaagtcctat cctgctcggg cacatatttc agtttggtct     180
gtgtcccttt caggaaccct tgcccataaa tccgcccgag ccgatagcta tcttggactg     240
gtctaattgt atcctcctcc ccgcaaatcg tcctctattc ccaaggcaac cctgtacgca     300
tctgctggtg gggctgcatc actttgttga atacatagtc cacgaataga agtagcccac     360
cgaacacaag gcgaaaacgg ctatcagcgc atcgacagta cataccgctt gatggccatt     420
gacaaagccc atacgatcaa tctgccaaga gaccgtatgc cacgaggaca aaatccaccg     480
acacgaagta gacagcacta tggctacggc ataggtgaca gcagtaagcc ctgccgccag     540
acatagaagc gtcctcgctc cttggtatag atccgcacga ggaagaatct atcacaaaag     600
ccatcgagac cacagaccat tcggcggcat ccgtatgccc caccacacat cgccctgcaa     660
cttcagagcc gtgacgaaaa agaggaggca cagaaggcaa tgccgatgaa tacgccggac     720
attccctcac gatagggggca aggaaaaaag ctatatagac gagggcagac cccgtttcgt     780
ctgacaggat aagcagtacg ggatgaggat aatggcaaaa g                         821
```

(2) INFORMATION FOR SEQ ID NO:1273

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 472 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...472

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1273

```
ttgaaagaaa cggaaggaaa aatctcgcag acttctttat ttgagcgatc ggctccgggt      60
ttgcctgctt tgatgtaggc gttcatggat ttaatgtctt cgggttgcag cggctacggt     120
cgcagcggta cagctccgtg aagggattgc atcgacgatc ctctgcaaaa ggtcgctttg     180
ggagggaatg cctttgtggc gaagtactgc tcataggtgt attcgacgaa agctgtggta     240
ggcccatgcc acggcggtcg aggagatagc cgtcggccag ctccaccgga gtgcgaaacc     300
atcgccacga cgaagatcgg aaggggcagg acgtgccacc acaacttttt gtcagccgag     360
agggtgatag gcacgagatt gcgatagtcg cccgcgtctt gtaaatgatg atcggagcca     420
atgccatagc cggcgtcatg gtgctactcc atcggggcca ttgccctcct nt              472
```

(2) INFORMATION FOR SEQ ID NO:1274

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1342 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1342

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1274

```
agttcagcac cgatttcgtc cagccggaca ccgcttttga aagcgtacgt gctggagtat      60
ctcacgacgc aacttcaaat ccggacgttc tatcttgaac aggtagcacc ggccatacga     120
gtgaccaacc ggtcctccat cccgttaggt ctacaggagg tttgtccgac gtcaagacta     180
tctgtttgcc aagcattaga ggtgattgaa cacttggaag aaagctaatt gcgttttctt     240
cttgcgatca accattggat gtcatcgatg atcagtacat ccacttgctg gtagatgcga     300
tgaagtcatt gatcgtcccc atacgggctg ccgtagtgaa ctgatctcga acaaatgact     360
cgatacgtat agtactttca accgggggtg cactctctga cacgaaggcc caaggcatgg     420
cacaagtgcg tcttgcccac acggaagctc catatataaa gaatggattc atcggcgtat     480
tgcccgggct gcggcgatgg cttcagccac tgagcgagct acatagttgc attcgctctg     540
tagaagttgc ggaaattgag cctgctattg agctgcgtgt cgaaatccgt gcttcgctat     600
gggtggctgc attgggcatg tgcctgtgta gcaaattaca tcgaactgtt cggctgcctg     660
tccaccgtcg gcacaaccgg ccaatgcacc gtgccgggat atttgggcga actgttgtct     720
acaagggcat tatacgtaat gatgcgttgg gacctataac acgccccaac accgtacgca     780
gctgtctacg aaattgccct ccaaaaactc acagaagaac tgactcggca ctttaaggta     840
agcgtatcgc cctcgataga taccggtatg ataggcaaga acatgtacgg tatgctcgct     900
catccacaat atcctgaagg atgcgaagac agcgtcccat atttcattta cattggtcga     960
gtggtagttc atctaaaaaa tatcgttttg agagcagtcg ttcattgctc ttttggggat    1020
agcaaaggtc aaacaaaaga gtaaaaaaac aatcgacaaa aagtgtagta taattcagtg    1080
aatcgtatct atattgtttt cagatggtta taaccttgag atataaaagc gaaggaaaca    1140
acgctattcc actgcattcc agacacttat acgaaaccga ccaaggcgcg accgagttat    1200
caacacccaa gacagagcct cgattagttg tgtacaaaga ggttgcgagg aaggagagaa    1260
aaatttttca acagatcttt atttacaatg aatcgaaata aggaaaatct ncggtgctcc    1320
ctaaatcagg atgtatccaa tc                                             1342
```

(2) INFORMATION FOR SEQ ID NO:1275

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 852 base pairs

(B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...852

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1275

```
atcttcaatc cgagaaaagt gggctcagtc aatcctgaag caatcttcag ccatcacgat      60
agaccgtgta ggtataagaa cgaacagcct gctccggcat ctcctcagta gcgactatct     120
cctgcagagc ttctacctct gcctctatgc gtctgtctcc tcaaaccggt gcaacgaaag     180
tcaatgattc caacactctt cgttcggaat aatctcttga gctgctactt ccaatggcat     240
aataacatgg gtaaaaccag ccaaagcagt gagcagactc ttttgaagta gttcgtttca     300
tagttatctc cttttttaat tagtatctca tcttgttgct tctttcgcct cttaaataag     360
gtgatacaca aagataaaaa tatatttcgc cgcaagctat tcttcaacct aaaaagtttg     420
tatgacgcag gaatcggaat ctttttcttc gacaaaattg aagtcaatca ggagcaagga     480
ggttctcttt aggtcaaaag actgatgcta cttgctttta taatgtttca ttgcttccgc     540
atatattggc gaatggcagc tatccgattg gcatcgctcg gatgcgtatc agaaactcta     600
cccgcccgtt accttgggca gccatctttt gccaaaagta attgccgnat tcgggttata     660
accggccatc gccatgaaga caagtctatt ttgtcggctt catactcctg tttccgattg     720
tagggtagcc gtaatagcac ttgtgatcca atgccatagg cctgcccgat gaccgtttgc     780
agtgtgctga cttggtggag actgctgcgc ccagtatatt accacccatt tgggtagata     840
ttcctgactg at                                                         852
```

(2) INFORMATION FOR SEQ ID NO:1276

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 854 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...854

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1276

```
cggcaagttc aaaagcgata atcgcattgg ttaatcaggc ttcctcaaaa aaagggaagt      60
ctgattttta catccatgca aggagcaata tgatataaat gtctattgcc gatgttgcca     120
tttctcttga aatttacgag tgagttgacg atttcccctc caataatagc caattcgagt     180
```

```
gtcagtttct ccaactagtg agcatcgcaa aggctttctt ctccgtaaaa ttgcttttca      240
aagcgctaca gtttggttat aattcacccc gacactgcga aattgtccgt acaagttgtc      300
agtttttggt agtaatcgag caacgaacga tccactttta tcatcgaaag gtctcattaa      360
agacccttgc cttgatgaaa gcggctctat ttgaagcccc gattgctcga atagcgttag      420
gaaacgagca aattctgtgt cgtaaatcga accatacaac aatggtcggc tcgttcattc      480
ttgggaggtc ccccacattt ctctttgtca ttactttgga ttttaatggt ttgtaattcc      540
tcttctggaa atagaacgtg ctaaacataa ttgaaatcca ttagagaggt tcacgataaa      600
atagccaatc aagacaacga aaacttctat ccaagaaacc gacttcggag gtgttctgcc      660
ctctgcaaga gcaagggttt tgagttccga aataatttcg ggtaacgcaa gacatacctt      720
gctatttgca ctgaccaaat aaattcgttc cgaagaacga tatgttattc tctcgaaatg      780
tatgtttcaa agccttgaaa taccgactta tcgtttactg caaagttact aaggttgggc      840
ctaaatccct tacc                                                        854
```

(2) INFORMATION FOR SEQ ID NO:1277

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1178 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1178

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1277

```
atgaaagttt ccgcccacgt gtttactacg acttttgccc ataagtatga ttcctgccca       60
acctaagtat ggtcgatctc attttcatg aaggaccacc gcaatacaga ccttgaagga      120
gtgtattcgc tgacaaaaaa taggtgaaaa aatctctatc tttgttcgaa ttgataatag      180
tatctgatta tgacaatctc gaagccatac aggcaccgat aaacggattc gtcaaagatt      240
ttcatattcg tttgagcatg cactcgattc ccaatcggag tggatgacga aagcataaag      300
atcttgaacg gttccaccgg taaacacgtc cgtccgctcc tgacggattg gtcgcagccg      360
tctgtgccgg caaaacgaat tcgacgactc ttaggcggct gtcctgctgg aaatgatcca      420
tacggcaacg ctgatccacg agacgtcatc gatatggctt ctacgcgtcg gggagtaccg      480
accctcaatg ttttttcgac aatcgtgtgg ccgttttgat gggggacttc gtgctctctc      540
cgccttgatg cgtgccatcg ctctgaatga tattcgcatc atcacgatat atcccggctg      600
ggacgtgagc tgtcggaggg tgagatcagg cagttcggac agccgacaaa gtgataatag      660
acgaagacat ttatatgggg gtgatcgaca gaaaacagcc atgctcttta gtgcttgtgc      720
agaggtcggt gctataccgt tcaggctcca gtagagattg tggaaagggt gaagagggta      780
gggggttgct cggctatgct ttccagatca gagacgacat attcgattac tatggaatga      840
cgtaggcaaa cctacgggca atgatatacg ggaagggaag atacactgcc tctgctgttc      900
gctctcaaga acgagcagtc tgcgctgcga gtcattgtct caccattctg gaccaaaaag      960
ctttctcgga agaagattta agcttcttac ctcctttgcc atagagcatg ggggtatagt     1020
ttatgccgaa gaaaaatggc tgaatttata gacaaagcaa aggctgagtt ggctgtttcc     1080
ctgactcaga tgctctgcag tcgttgcttg ctttggctga ttttatctac aaagagcgaa     1140
ataataagtc ttgtactcat tctttcttaa aagccggc                            1178
```

(2) INFORMATION FOR SEQ ID NO:1278

    (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 678 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...678

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1278

gcgttatctc tatcatagtg gatattcgga gcattccgct gccggcacct tccctgctac   60
cgtttgaccg gacatccgaa gttcagatcg atcaagatcg gaccggccga ttcgcatagt   120
cgggcaagcc tctaccatcg aagccaaatc ccgtccgtat atctgtacag ccatcgggcg   180
ttccgattca tctatgccat ttttcggaat gtgccggcta cttgacgaat cagggcatcg   240
gcactagaaa ttcggaataa accagatcgg caccgaactg cttgcacatg atccgaaggc   300
tacatccgtc acatcctcca tcggagcgag tagcaaaggc tctccccgag gtctatggca   360
cctattttca tgctccttgg gctatggctt gtcctgtcgc agagccgctt gaatatcggc   420
acatacgttt tcctctccca aagctctacg atgcctgcag tggcaagttc ttcgtggacg   480
tccttgcgca accggagagg acgatgctga ccccttcttt ccggctcatt ttgatcaggt   540
ttccagattg tgcatccctg tcgaatccat aaacggcaca tgccgcatct gataatccga   600
acatcgggat ggtcgcccaa tgtgttcatg atctcttgaa tctgttcgcg ataccaaaga   660
agaaaggccc ttcgattt   678

(2) INFORMATION FOR SEQ ID NO:1279

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 709 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...709

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1279

gcgcccaaat gccaaagatc ggaggggaaa ctttcggcct gaacgtaatg gtgaagagga   60
cagggatcag accgaaaaaa atgaagactg cgatttcgcc aatccatgat aggccaaagg   120
ataaggaccg gcactatacg acaaagccca atggctacaa cgactcccac gaccagcaac   180
caccagttgc taatggacaa agcagaaaac cgctaaagcc gagcagaaaa agaaatgaga   240
aaagactgcg agaacctgtc gctccgacaa ccaacctttg gagatcccac gttcaagcct   300

```
acacgctgat cggtatccgc acccttctta tagtcgaacc aatgttggct atattgctga       360
ccgtttgggc agacaccgct acgatcaaag ccaagcggcc tgtggccagc gaaaattgcc       420
gtcagctata gcataagcaa tgctacaacg acaggactga cagatgccgg cagggtatga       480
ggccgtagca agcgagccaa gctttgagac gcgggggtga tccgttattg ctcatctgaa       540
aaagacttcc cggtagcgga cgcatattat aggaagaagc catcacggtc catatgctcc       600
ggccgaacga atagccagat aatcgccgcg tttgagtcgg gcatgagcaa ttcacgctcg       660
aatacatcgc tggatcgcag attgggcgac aacatcgatt tctctgcag                   709
```

(2) INFORMATION FOR SEQ ID NO:1280

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 627 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...627

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1280

```
ggcagaggat gatgtggaga cgatgacgac taccgacctg catacctatt atcgcatcag        60
aagcaaaggg gcgtgggcaa cgtcaagctc tttgagatga actgcacaaa cgctatgcag       120
ccatcttctc tgcctttatc ctcaccatat cggtgcttcg ctctcttcac gcaaagtaaa       180
aggagggatg gggatcatat cgctatcggt ctggggctta gctttgccta tatcctgttt       240
atgacgttgc cggtacattt gccatcagcg gatctttgcc tccgtttatg gcagttggtt       300
gcctaacttc gtgtttacgg tcattgccgt ttccctttat aaaaagctcc gcgataggca       360
gacttccgga tgtaacgata tccacaacta tgaagagaaa atacagaaga atatcctcat       420
aaagaacaaa cgtgccactt tgattacgag attttggacg tttacacggc gggcattgta       480
ttggtcggta cgagatcaaa tcgctccgac tgggcaaagg cggtttggtt gatacctatg       540
ctacttccat cggggagagc tgtgggtgaa gaatatgtac atagccgata ctctatgcac       600
ctatacaacc atgtgctcgc cgcgacc                                          627
```

(2) INFORMATION FOR SEQ ID NO:1281

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 5789 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

```
agattttttc atccggccag gtcagtcgat agcaggccgc tacaggcgtt cgggagagta    60
gtgcatcatc agttcgcgct gtacatcgtc cacgatgcgg cattaaggaa gatacacatg   120
gtgctttggg actgtgccag cagatgggct tctctttctc cggcatggga gtgcgccctt   180
cgccacgggt gaggatatgg tttgtgtacg ttcgggaatg gtaaactgtg agcgcagagc   240
tgcggtgcag cttgaaacga ggagataccc ggcgtgatat gatagcgcat gccgagtggt   300
cgaagagtgc catttgctct tggatagcac cgtagatgca gggtcgcccg tatgcaggcg   360
taccactaat ttgcctcggc ggtaaaagtc cgcatgatct cgaactgttc ttgcagattc   420
atcgcagccg aacttctgac ctggcaccgg ctttggcaca agcggtcagt tcgcgaggga   480
caaggctgcc gcatagagaa tcagatcggc cttttccaag aactgtctgc cacgcaccgt   540
accagatcgg gatcgcctgg acccgctccc actatttcga tatggccgta cgggtggagt   600
cggctgtctg tgccacggca aaggtaaaat cgttacctcc gatagctgcc ctttctgctt   660
ctctatcaca agacttccca tatccgtact ttccgtgccg aggcttcggc tactccgtag   720
caacccgtaa cggcaatacc ttttccgagg ggttggctac ttccaccggc tgtaagtctt   780
gtccgtatat atatgtagcg gtatccctcc gagacgatgt acgagatcgg ccaaagcggc   840
tcttcggctt tgatgtcgat cgtggctatc cgaccgatgg ctcgggggca taacctgact   900
gccgtatttc ggagaagatg tgttccgcaa tccttcgggg gcacatagcc tgcgacaacc   960
tactccgatc gtaagagcag aggatagtag cagatcatcg gcaaccggct ctccaagtgc  1020
cgggcagaac aaccaaaatg aggtcgaact ccgcctgatc gacagcatcg aatgagtaaa  1080
aaggcggaca tgaggcggac aagacctttc caaaaaatct tctcctcccc cgaagtctcc  1140
aataccaatg ccgtacgtgc tcccccacg aagagcaaat gggacgattc atgtcgcctg  1200
tattggaaac ggctttccat ccatagtcga agccagcgta tccaatgccc agagtcctgt  1260
tcggtcgctt tgggggtaac caccggttcg ccaccgatgg cagaggcgat cagccgcgtc  1320
agacgttagc tccacccata tgaccgctca gaacggaaac cacgtacctg ccgtactgtc  1380
tacgttcact acggccggat catgatgttt gtccgccaca taggcgcgat gctccttata  1440
cagattccca tggcaccgat gaaaacccaa catcgtatcg ggcaaaagat tcggccatca  1500
gctccgcaat ggaagagacc aggaaacatc ctccgtgcag tcggtaaaat tcgcgccgac  1560
ggcaaaaact ctttctctcc cgatagttcg gatgcaatgg tccgcgccaa tgccagacgg  1620
cagcggatac acagattatg gcagtatgat tcggtttcga catgatgggt agtgtctatt  1680
cttttttttct tgcttggagt atgtcgatag gattgtgccg tcagccgtca gtcggatgga  1740
tgagagcagc tccatcccac aggctctatt ccggtgagga agaggtgccg actctcttcc  1800
gatacggagt tgataccagc aggccgcctt ttgtcataac actgtgcacc ttagcgatca  1860
ttctacaaga cggcctccgt gaccgccgat aaaaacggca tcgggcggag cagggaagaa  1920
atatcctcct ccataaaatc tccgatccgg tacgctatgc gggtgcaccg aagcggcggc  1980
tgttcacggg catcagttcg gcaccttcgg acggatctca aacgcagtga tatgcaaatg  2040
aggaaagttc aatttggctc gatggaaacg gatcccgtac aaaaacctat atcccaaaag  2100
gatgaggtcg gtgcagttcg agacaactga gcgaaacgag tcggaacggc atcttctaat  2160
catcttcgtt cgcccgttga gcggcatgaa agcactttcg gacagccgag cggagcacga  2220
ctgcaaacga atggccgagt agccgagagt atcagcagtt ggggcgttcg aagtcgcgat  2280
cggctgcctc tcgcagggag aactgtccaa gcattgctct tgggggtttc ccatccgagt  2340
acctacggac atgtatagtc ctcatagccg taatcgagca ttcgcattgc gatagcggag  2400
gggtatgctc gtggtcggtc agaatgccga tcttctctgc ccgctcgatc gtgcacggtc  2460
gaactcatgc catggcctgc ccgtaagcga tacgatccga tatcgtggta cggcatacga  2520
agagcatgag caagcatctg caagctgtga acgtgggata gaccgtaacc acggcatcgg  2580
gtagccgatt catcacctat tggcaaagcc gaagaaaagc ggatcccccg aagcgaaaac  2640
aactattcct catactcccg ataacgggca aatacatcat ccagcggtac tgtaaatcta  2700
tccactcggc atccgcaggg agtagtccgc gcacgatctc atgagccgtt tgcctccgct  2760
gaatatcttg ccggaagcaa tagctgtcat agcgcaggag ggaagaaagg atgagggtca  2820
tcgctcatcc cgagtatgac gatcgctgtc gccgtatctg aggagaagct cctccgtaag  2880
tagcttcaca ctcgcgcccc ggtctgagtt gttcggcatc gttatagcag agtatggcat  2940
gaccagcgtg gcagccagat tgctgccgcc tttacggcct tcgacgatat cttcggaatg  3000
gagcggaacg gcttcacggc atgtttggat tcctgtactg gacgaatccg accggtgccg  3060
caatgatccc ggccggagag gctttgctcg acggatcaga tcggccagtt cctgtaaggc  3120
tgtgggtgca ttgccgaggc gaaaagagca tcggggtgct cctccacggc caggcgtatg  3180
cctgctgcgt tcgggtgatg ccgtgacgag cggccagttc tgccacgcgc ggatatgcag  3240
atagcatttg gcctccacac ccagacgctc cagtgccccc ttggaatacc ggaggtaacc  3300
atggtcacat ctgtgacaat cgtgcgcagc cgccggcttc gatcatttca tacagagaag  3360
```

```
ccaccggacc ggcatccgtg tgaggatatt ctccatgtcg aagtccgctg tggtatgaat       3420
ggcatggagc aagcccactt gtggtctaaa ggccaatcct gacggtgcag ctctttctca       3480
tcgtgcggaa actcttgatc ataatctcct gcccgatacc tttggcttga tctcttcttc       3540
ggggtagtag ccgcgagggg tgataaagtg cccttcgagc agtacgactg ggaattgcct       3600
acgagtacca cagtgaacat atccacactt cgggatcgaa ttcgccgaga gtcgtcaccg       3660
tcacctgctc ctcttcggcc tgcctgacgg acaagtccga cggcgtatcg ccgaacgat        3720
actgatgaag atctctacga aacgatagag ctgccagtat cggcctcgct cttggattgt       3780
atatagctgt gacgaagtcc gcgnaggctg ctgccactat gccttttcga tgatcggcca       3840
aggggtcatc agatcgctca gcgagatcag gagaggtcgt gaccgatggg agcacccagc       3900
agcgaagccg ctttctgaaa gcactgatac cgggcagcac ttcgatgtcc atctccacgc       3960
ctttggctct ttcatttcat atataagagg agccataccg tagatgccgg catcgccgag       4020
ctgatcacgc agaccgtctt gccgctgagg gcatacccga atgcttctcg gcacgctgcc       4080
gctccttctt catgccggta tccacgcagt gggtatcgga cggagataag gttcgataaa       4140
acggaaatag tatttatagc cgacgctacg tcggaccggc cgatagccga tagcactgca       4200
ggagtaatat ccgagctcct cccggaccga tgccggctac gatgattcgt gctcgattca       4260
tttactgaaa acaaatgaag gtattggaag aatggagatg gcgggcgaat aggtttgcct       4320
gcgctcccca caaaagtaaa gaaataagac atgcagccat acgccccgac atcgatccga       4380
tcgcgccaat gtctatagcc tgctgtcatg aaacacgaac caaaaatgcg ccgattgcgg       4440
cgcgtgtttt ctgaaaaaag gcgcgagaaa ttgtttcgtt gtggcgtgag aatttttcat       4500
tttcccgaca gaagcaaaaa attacgcgcc acgttttgag gaacgacgaa caccaaattc       4560
cggcgcgtaa ccgatccctg tataagccga tgtgtcaatg cttttgttt gagttcggta        4620
tcggaagaga gtaatagtag tatcggatga ggtaagcttc ggatcgtcga tggggtgctg       4680
aaaggatgag attcggggaa gggcaaaaaa ttgctctatc ggatgacaga ttccggtttg       4740
ttctgcgtct cgtaataaag acctttgcaa cggaggtcct gtcccgatta cttaagcatg       4800
gagtagaagc attcgcccat agcgtagccc ctttggcccc tcgactcaaa cagtggcata       4860
tagcatcctc gacgacgagg aagctgcggc cgacgtgtcg aagaggctct gatgcgtctg       4920
tggatcaacc gagagcggct gggcggatag acagcatcga agcagtggct gtgaccactg       4980
ctcggcgaat agccttggta tgctccgcaa agaaggacgg atggaaccgc taccggacga       5040
tctgccttct ccgatcatgc ccctacaccc caaggtgtac tggagcaatc cgagacatgc       5100
gtctggtgga agctgctatc gaagcactgc ctccgttgca gcgaagactt tccggctgaa       5160
agagatcgaa ggctacgaaa gcgaggtaat cgccggctcg taggcgtgaa agtcgaagcc       5220
gtttatacca acttgagccg cgccgacgcg cactgcgtac agcactggct ctccaactca       5280
aacgatgatg aacgaatagg gttcaacaaa aaagctgttc cgaccgaagc ggaaatcggc       5340
cattgttaga taagtacttc gacgggctta cctccggagc agaagaggat gcctgcgtcg       5400
ctattttgct acggccaagc tgcccgagca gtgggagcat tgcgccccct cttcggttat       5460
gtcagttgca ggcgtgccgt ggatgggctt tcctttccta cactcggaaa cttgctaccc       5520
gcaacttgct ctcaagagta tcctgtggag tgtaggagga gcctccgtag cagcagccat       5580
cgctctacga tcgctctccg atcgcctcat gtggcggatc agccactgcc gactagggtt       5640
ccttcgccgt ggtgaacggc gagcgtgtga acgatcccga tctgtgcgac tgtatgcaca       5700
ggaagccttc gatgctgtat ccatcgatag ggagagttgg cacaggagct tttcgacctt       5760
tgacagatag atgagcgaat actaaatca                                        5789
```

(2) INFORMATION FOR SEQ ID NO:1282

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1058 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature

(B) LOCATION 1...1058

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1282

actcatggaa atgccgactg tttggggata gggcagggac tcgacgtcat actctaacag   60
cccgattgaa ccaatacatc ttcgcaggga ttatgtacag tctatcatgt agttcggctg   120
tagcagattc aactattaga tcgcttgaga agtcctgacc acatacgcac ctaacaaggg   180
attctcggct ttcttagagg aagcagagcc acccaatatg ccgtttattt agaaggcccc   240
tgtccccgtc agaattttat gaatatttac cttattcttt atatcacaat ctctgactgt   300
tgttggcgaa atgttgctat catccattat caatactaat tctttgatac gtattcgaaa   360
ttcaacttca atttgcttgg cgaccctgca ctaacattat ggctcatggc atggaggtta   420
gtaattgtat tacactacca acaacaccat tataagcagt ccgataacaa taaaaaatgg   480
tggctgccta aaataccgga aaaaggagtt ttgcatttta ctaataatgg ctccatacag   540
tcatgtccgg aggaactctg gaaataggca atcaggctaa aatatccgag agaccggtgc   600
taaccccacc tttattaccg tttacggcga tggtcttcga ttaacaagca ggtagagata   660
gacaatatag accgacttaa cttgtttcta cgcattcggt catgcccaaa tttcattttg   720
acagtgtgaa attcacagtg ccccgctgta tacaacgaac tgtattgtgg agataagcaa   780
ttgcaattta ccaatcgaag tgacattatt tcaaagaatt gtgacctaag cgtgaaaaca   840
gtatgtttag cagttcgggg ataacggtat tcaagcctat ggtacaagct ccatcaccgg   900
attatctaca aaagcaaaga ttaccgacaa tcttttttg cgacaggaaa cttcgcctac   960
catatcacaa acacgccagg ttaacagcaa cctccaatgc tgccatcaag ttagacaata 1020
ttcctgagtt taccatttcc ggaataaaat agtcaatg   1058

(2) INFORMATION FOR SEQ ID NO:1283

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 609 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...609

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1283

ggccaacctg cagtgttaac ttgttctttg atttcttttg ccatagtctt attatttatt   60
tttttctttt ttggaggatt attgtctctt cctttaccct ggggtttcct gttttttgaag   120
gccaacctgc agtgttaact tgttctgttt ttttgttttg cccattagat gattgccaag   180
acatcgtttt ggcgcagatg atatattttt caccctccag ctctatttca gtgccggcat   240
atttgcgtag agtacggtgt ctcctgcttt gagcaccatc tcttcgtctt tcgtccgttc   300
ccgacagcga ttacttcacc cttgagaggt ttctctttgg ccgatccgga ataatgatcc   360
cgctcactgt tttttcttct gctgcagccg gcttacaagt acgcggtctg ccaatggttt   420
gatgttcatt gttgcttggt tgttattgtt agttgattgt ttgcctgtac aaatgggaag   480
cctcttatgt gctccgcaat ttttatgtca atagctatac caatgccgat ttcctgacta   540
ttcctgtcgg aatgtgctta ttcgctgtca gaatggcagg attgtacggt agcatctgct   600
cgtgcagaa   609

(2) INFORMATION FOR SEQ ID NO:1284

(i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 530 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...530

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1284

```
ggcctcccga ggcaagagcg ccaatacggc cgtgatgtcc ttgtcattgc catgccgaag      60
acgatacgca gctgtcggta agtctgtcgt ctcagttgtc ggtgatcaga cggaatccgt     120
cttcgttgtg tccggtatcg catacgaccg tggctgctcg gccaactgct gccaacggcc     180
aaacagccct gacattccgt aacgtgggca aatccttcac ggacgtgttc cgaagaaaga     240
ttcagccgca tcgtttggaa aggacctcca cggcacagag aatcgtacgc gcgtctcctc     300
ctgagccaag ccggtcagtt cgccacgaac cgatccatag tccgtgtttg gtatgtatag     360
caaccgtttt ctaatgtcga ggaaatgatt accccgattc ttgagcaaag acaatatccg·    420
ttctttcctc atcggctttg tctgaaaggc atggcgcaca cctcctcggc tcggccgacc     480
acaacgggga tccggacttg atgatcccgg cctttcgaa gctatcttct                 530
```


(2) INFORMATION FOR SEQ ID NO:1285

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 712 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...712

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1285

```
ggcggcaggc atccccacgg gcgcatcgct cggcaggacg atagtcccgc attcgacgag      60
cctacaccga tttccacttc ggagcaaatc attccgaact ctccactccg cgaatcttgg     120
atttcttgat ggcaaactct tcttctcgtg atagagcgtg gtgcccaccg ttgccactac     180
caccttttgt cctgcaccac attgggcgca ccgcagacga tttgcaaagg cgcatccgcc     240
cccactctac cgtggtgata tgcaaatgat ccgaattcgg gtgttcctca caagcagaac     300
atggccgatg accaaacctc gcaagcctcc ccgaatcgtt tcgtctcttc tacaccgccg     360
gtctccagac cgatggaagt gagcgtgtcg gcatctcttg cggagagagg gtgcagggca     420
```

```
ggtactccaa gagccatttg ttgagatatt catctttgtt actccttagt tgtatatgtg      480
cttcagagac catgggtcag gtctcaaacg cgattattat atgtaagccc acaaatttac      540
gtttttctcg gggagtgttt gttttatgtt cgtcttgcgc tggtttgccc ctccgagtgc      600
tctgcttttc gttctcccaa agattctggc tttcctttcc ggtttggaaa aaattcggtt      660
gtatttcngg cctgtaaaac gtggttttga ggaaatattt tttggttttg gc             712
```

(2) INFORMATION FOR SEQ ID NO:1286

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 527 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...527

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1286

```
tgctttctcc tctgaaaaca cagttagagc aacaagtcaa ttggagttca ccgtcttcgg      60
ctcttatggc agtagcgagt tctttatcaa cgttttctcg gattcctcat attggcaggg     120
atcatcctgg accgcatggg cgtgcgttca ctgccatttt atccggcagt ttgatgcttt     180
tgggtgccct tattaagtat atgccttgag tgaagtcttc aatggcggcg gcttcggcta     240
cgatagctca attccttttc tatgggtttc ccgccatctg ccaagctggc ctgttcggtt     300
ttgctatttt cggatgtggc tgtgaaatgg ccggcgtaac cgttcccgtg ctatcgtgaa     360
gtggttccat ggcaaagagt tggctttggc cagggacttg agatggctat tgcccgtttg     420
ggagtcttcg ccgtgttctg cttcaccta tcatttcaaa gcagttcgaa ggtacgcttc      480
agagcgttca gtaccggtta tttccgttac ggcactcctt tcatcgg                  527
```

(2) INFORMATION FOR SEQ ID NO:1287

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1613 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1613

```
gcaaaagtct cggtctgtaa aatcaattct atcaactcga cacccatcaa cgaaatgcaa      60
tgaaatatgc acttcatccc ctgtatgaat caggtttttt catcttcttt attgaaaagc     120
aagaatcaaa attcgatcgc cgtctctctt gatcattcaa gttcttcttt ctacggcaat     180
ggacaatcga tcatcagaaa aaggctgctt gaaaatgagt cggaatattt tagcaggtag     240
ctcttctttg ttcttgcatg ccgaaaatga cagaggttgg caagcaaaac ccgtcgacac     300
tgtaaattaa atacttacct ttgcaatagt gacattaaaa acataaagca cagaaacaaa     360
tagcaaatct gaaatgaaag aattttttcaa aagtttttcg cctcgatcct cggggttata     420
acggcaggaa tcatcttgtt cgtatctttc tatttatctt tttcggcatc gtagccggta     480
ttgcctccaa gcaacgggag gaaccattcc gaagatcgaa gcaaactcca tcctacataa     540
gacaattctt cttttccctga gatcgtatcg gccaatccct ggagcatgtc acaggcaaag     600
acgagtccgt atcgctctca caggcagtcg aagccatggc caagccaaaa ataatcccaa     660
cataaccggt atcttcctcg atctggcaac ctttccgtcg gtatggcatc ggcagaggaa     720
ttgcgtcgcg cgttgaggat ttcaagatgt cgggcaagtt cgtcgtatcc tatgccgaca     780
gataacccaa aagggttact acctctccag tattgcagac aaactctacc tcatccgaaa     840
ggaatgttgg ggcttatcgg gattgcgacc caaacaatgt tcacaaagat gccctcgaca     900
aattcggcgt gaagatggag atcttcaagg tggcacctac aaggcagccg tagagccatt     960
catgctcaac aggatgagcg tgccaatcgc gaacaaatca ccacatacat aaacgggctt    1020
tgggacaagt cacatccgat attgcagagt cgcgcaagac ggcaatggat tccgtgaaat    1080
gtttgccgac aaaggcgaaa tgttcggtct tgccgagaaa gcggtgggat gaagctcgtg    1140
gatgagctgg cttaccgtac cgatgtggag aaagaatcaa aaagatgtcc caacgcggag    1200
agaaagatga acttcggttc gtatcctttc tcaggttctg gccaatggcc cgatgaacaa    1260
aacgaaaggc agtcgatcgc cgttctcttt gccgaaggtg aaataacgga agaaataata    1320
ataaangccg ttcgacactg acggtagctc catcacacaa gaactcgcca aaaaatcaag    1380
gcagcagccg atgacgatga tatcaaagcc gtagtacttc ggtcaattct ccgggaggta    1440
gtgctttcac ttccgaacag atatggaagc ggtagccgat ctcaaggcca aaaagcctat    1500
cgtggtctcc atgggcgact agcagcctcg ggcggatact acatagcctg cgcagccaac    1560
agtatcgtgc agagcatacg actctgaccg gcttcatcgg catattcggc atg           1613
```

(2) INFORMATION FOR SEQ ID NO:1288

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 747 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...747

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1288

```
taatcaccgg agccacatcc ggcatcggtg cagcttcggc tcgccgcttg catcgctcga      60
ttataacctt atcatcacgg gacgacgctc cgaacgttgc aaaacattgc cgatgaaatc     120
agagctgaat accctgtcga aatcctccgc tctctttcga tgtccgcaat cgcgaagaag     180
tagaagccca tttgggaatt tgcctgatcc ttggcaggcc gtttccgtcc tcgtgaataa     240
tgccgcttgg cagcgggact cgaccccata cagtccggtg acattgaaga ctggaacgta     300
tgatagacac caatatcaaa ggactcctct acgtaactcg cacatcagcc cgggtatgat     360
agcccgaagc gccggccata tcatcaatat cggtctattg ccggcaagga agtttactct     420
aacggcaatg tctattgtgc ccgaagcatg ccgtagatgc tctttcgaaa gcgatgcgta     480
```

```
tagatatgct ccttatggca tcaaagtcac acagatttgt cccggagcag tggagacggg     540
ttctcgctgg tgcgcttcca tgatgatcag gccaaggccg atgccgtgac aagggcttca     600
ctcctctctg tgcgaacgac atagcggagt gtattgcgcc gtactgaacc tgcctgataa     660
tatctgtatc aacgatatgg tggtcagccg aagcgcagcc ggcagcggac actttttcaaa   720
caagttgatc acaaaaggcc aaacgat                                        747
```

(2) INFORMATION FOR SEQ ID NO:1289

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 670 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...670

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1289

```
atgatgcagg acgcgattgt cggctgtttc ttgctccctg catgatgcag acgcgattgt     60
cggctgtttc ttgctccctg catgatgcag gacgcgatgt cggctgtttc ttgcttcctg    120
cacgatgcag gacgcgattg tcagctgttc ttgcttcctg cacgatgcag gacgcgattg    180
tcagctgatt cttgctcctg cacgatgcag gacgcgattg tcagttgatt cttgcttcct    240
gcacgtgcag gacgcgattg tcggctgatt cttgcttcct gcacgatgca ggaccgattg    300
tcagctgatt ctgctcccat caatgcgcta actatcagct attgcaacta ttttatagga    360
cttttattga agtcttttgc cgcagagctg atcttaagtg ttttcagat  tacttgaggt    420
ttgcagagag atcgcatgaa gtctcctttc ttcgtcaaat caatgcttgt gtctgtcttg    480
atcgatatga gaggtgggaa ggttattgtg caacagtctc aaaatgtgaa gacgctcgga    540
tcggtcaaat gtttcgacac gattactgat ttttgacctt tctgagtaca actttttccc    600
gtacacatca gaaatgatgg tgtacagatc ggatgaaagc cgtttgccga ttgtggtagc    660
tttcagccgt                                                          670
```

(2) INFORMATION FOR SEQ ID NO:1290

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2736 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1290

aaaagagacg acaaaaatta ctgcaatacg cataattgat ttatggctta aaaaggggtt   60
gttgatgtac attccgtact atgggcgcaa agataatcca atcccaattt tgccgacctc   120
taaaacgctt tgagaatgat atttattatg acgttttgga agcttcttcg atcaggagag   180
gattgcggtc aggcgtttgc gaggttgtgt ttgacgggcg gaaaatgccg agtggttttt   240
gttaatttgt tcatcctcaa tcattaacag cttcgcttat gaaaaagata ttatgacggt   300
gatcctcatt tgtattttat cctctttcgg tgtggcgcaa gtggagtgcc acgaatcgat   360
gatatgagag gaatgcgtat ggacaccgtg tcaagaaaat aaaggattat gcacaacggc   420
ggttctttta taaggtggtt ttgtggaaga taccctgaag cgagaaaaga aaaccgaggc   480
gcagtgtgtg tggagatcgg acggcacggc agcagcttca aggatttgta tcagttagct   540
gggattcttt gaacgatgcc gttacccggc gaaaaggttc gatgatgggc tattcactga   600
gggtgccggg ttggtgaaaa agataaagtg gagaatatcc tgctgaaagg gtatcctgaa   660
ggagcggacc ggcatcaaca agaggtccat tgacaggtcg gtatgagtat gaatgtccgt   720
cgccgtcttt cgattgcaga tcggggaaga gaccgaagag atcatggaat acacttgccg   780
aaagccacct gccaccacag cggacgggat tatacggctt ggtatacccg aggtattgcc   840
ctctcggatg ggcncgtaca tttttcgggg attgcccggc ctattgtggc catcgcttcg   900
gatgatgggg aaatatgcatt cgaacttaat gaatgcaggg ggagattact ttcccctcac   960
ctatatttct gtacgacaaa aggtgcaaaa gtattcgcgc gaagaagtac gcaagattat   1020
ccgaaacatt cggagaatta ttccgagacc atcatcaatc agggaagatt caggcttaga   1080
atccggagga tattcagcgt atcagaaatt tgccgtacaa tcccttgaga aagaatgaaa   1140
acaaataaaa cactcagcat gaaaaggaca cttttgtcct cgcatcctgc ttttttatga   1200
gtatgagctt catacaggca caggtccacg tatcgtgggc gcagaaggga tgccggtaga   1260
tactgtgccc aagaggtgga ggactatacc aaacggcgat ttttttacaa agtctctttt   1320
gtgaagatac cacgaggcga gacaaagaaa cccaagcaca gtgtgtattg gaatagggca   1380
gcgagggagt tgcttcaaag acttttacga gtatgcagcg gctcggtgaa tgatgccgta   1440
gctcggaaga aagggactgc tatggagatc tttcgaaagc ttatgattac gtcaagaaga   1500
cccaatggcg gactcccgtc ttaaaggcta tccatcggga caagattatc atcaatacgg   1560
agatccgaag tcggttctta tgaatacggt tgtccgtcgc cgtctttcga ttggcagtcg   1620
gggaagagac caaggagatc atggaataca cttgccgaaa ggccactgcc accacagcgg   1680
acgggattat actgcttggt atgccgagga tattgcctct cggatgggcc gtacattttt   1740
cggggattgc ccggcctgat cgtcctatcg gttcggatga cggagagtac gtattcgaat   1800
tgaacggaat gcagagatta catttccgtc tccgatttat ctcaagaaaa atgcctttac   1860
gaagtcggct cgcgtgaaga gatgcgcaaa acgattcgta atatccacga gattatgccg   1920
aagtcgtggc caattcgccg gcttttgtca attccccgat ccggtagact tttctcatct   1980
gccacctcag ccgtttaatc cattggaggg gaataaagca tgatgaatag ggctgtcact   2040
tcgatttttgg cgtatttggg ctgtgcgtgg cggggctgtt gcctgtcgtt gctcaggaag   2100
cgaccggcaa atgcttgccg gtcgtgtgat agatgccgag agccaggagc ctcttgcggg   2160
gcagtgtgcc aactcatgga tgcctccggc aaaccgcttg ccttctcctc tcgaaagccg   2220
acggctcgtt ctctctggag aaaaaagccg gcggaaactc cttagcgtaa gatatatggg   2280
gtataggaag atgagcaaag ccacgatgcg gctgctcctc cgctgctttt cgctttggtg   2340
ccgtccgacg tcagctcaag gaagtggtgg tacgcgccga accggtacgc aagctgggag   2400
aacgattgcc tattcggctg cggctttcgt ggggccggac gatcggtatc ggccgatctg   2460
ctgcgcaaat tgccgggaat agaggtctcg gcaaacggct cgtcaaatat cagggcgaac   2520
ctatcacaca tatgtatatc gaaggcgtga catgctgcaa aaccgctaca atctggcctc   2580
ccggaacatg cctcaagggc ggtgaaaaca gtggaggtgt tggaggggca tcagcacatc   2640
aaaacgtgcg ggagacagtg ccggagaaaa gggctgcact caatatcaaa ctccaagaac   2700
gcttccaagg tgcgtccctt ccngaanaag ttaacg   2736

(2) INFORMATION FOR SEQ ID NO:1291

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 830 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...830

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1291

```
gtggtcgatg ataacaaaca tgtactgacg gctttgaaat tgctcctgag gggagtttcg      60
agaccgtgac gctcctacct tcccccaaga cactgcttcc acgatcgtag aggtgcatcc     120
ggatgtactc ctgctggata tgaattttct accggcatca atacgggtaa tgaaggatta     180
tattggctgg atcaggccgt agccgtttcc ctgacctccc tgtggtactc tttaccgctt     240
atgcgacatt cgtctggcag tggaagcctt gaagcgtgga gcaagcgatt tcgtgtcaag     300
ccgtggaaca acaccgagct gttggagtcg cttcgcatgg cgagaataag gccgcaagca     360
ctcaagtgac ggctacacct aaagaaggcg atcggtattt ctcagcaaaa gcaaggccat     420
gtgtgaggtg ttggagctgg cggtcgtatc ggcgatactg cagcccatgt cctcattacg     480
ggtgagaatg taccggcaag ggcgttttag ccgagtatat ccatgcccgt tctcctcgtg     540
ccggcagccg atgctgactg tggatatggg agctttgagc gagacgcttt cgagagcgaa     600
ctgttcggcc atgtgaaagg agcctttacc gatgccaaag cgatcgcgcc ggcaagttcg     660
agacggcgtc cggcggcacg atcttctgga cgagattggc aatctgagcc ttgccttgca     720
agccaagttg ttggcgtact acagcaaaaa gtggtgaccc gtgtgggcag caatacaccg     780
atcctgtgga tgttcgtgtc atctctgcca cgaatagcga tttgcccttc                830
```

(2) INFORMATION FOR SEQ ID NO:1292

        (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 2389 base pairs
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: double
                (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
                (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
                (A) NAME/KEY: misc_feature
                (B) LOCATION 1...2389

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1292

```
acggatcgta agaaaccaga tttgaaagaa ttgatcatca accgacttgt accgaaacct      60
cttcgtccgt tatgcgccac atatctcggg tgacaaaaga atcattcggt tatccggatg     120
gaccaccgct gaaaaagccc ttatcgtctt tttctctttc tcgtcaatgc tctctttcaa     180
tacaaatcaa tgagttaata ccgttggtaa atcaatgtcc ggcatatctc accccaagga     240
gattgcgaag aaagaggaaa aaagcagcag atctgtaagc cgggttctgt actccggcca     300
cacgtagcca gagcgtctgt catttatctt ggccgtgcgt cacgcatggc tccagcgatc     360
tacccccgg catcgggcga gccaccctac atcgccggta tacatgatct tacaacccat     420
cagacgtacg gcatgcagcg taccgctgca tccggtaggc tcttacccca ccttctcacc     480
cttaccctcc cgtagtccgt accgaagcac agacaactca tggaaaatgg cggtcattcc     540
```

```
ttctacgctc ctttaccctc acgagtaact tcctgttagg aaggatgggc tctgcgttgc      600
ccggacgttc ctcccactct cgaaagagtg agcgacaacc gatctgctgc taatcttttc      660
tttcgtcttc tatatcttat ctatgtccac ctctacgacc ttggtcggat caagatgttc      720
attgcgatag tccactgctc taccactcgg gcagccaatt cgcggaaagc aattcccatc      780
atcgatcatc ccgaacagca acgggtattc cttcgtcccc gctttggcat atacctgcac      840
cagcggaatc tgtccgagca agggaatatt caactcctcg gcaaattctt accgccatca      900
cgcccgaaga tgtagtattt gttctgtggc attcggccgg tgtgaaccac gacatgtttt      960
ccaccaaacc gagtaccggc cattgatctt ctctccgaca aacatactga ttcctttccg     1020
agcatcagca aggctacgtc ctgcggtgtc gtcactacaa cggctccggt aatagccacg     1080
tctgtacaag tgtcaggtgg atgtcgctcg ttcccggagg catatcgtca ggaagtagtc     1140
caactctccc caattggcat cgcggataag ctgtgtaggg cattgcctgc catacttccg     1200
cgccagagaa cagcattgtc cggatcacga agaatccgat agagaggatt ttcacgccca     1260
tcacctcttc gggacgatca attcgcgtcc gtccacttct tcaagtacgg gacgtgactc     1320
ttccagtgga acatcttagg catagatggg ccgaatatgt cggcgtccaa aatcctaccc     1380
gatagccgga tttggccaga gagacggcca gattagccgt acggtactct tcccgacacc     1440
gcctttgcct gagaaaacag caatgatatt ttcaccccgg gcagaagttt ggccggagga     1500
gcaggtattg cctgtttgcc ttgacagaga tattgccttt gatattgacg tcttcgctga     1560
tatatgtcgg atggctgatt cagctgcttt gaccactgat ttgatgaatg gatcgttgct     1620
ttgtcgaata tgagtgaaaa cgatacctta ttgccatcga ttctgaatcg tcctctacca     1680
ttccggccga aaccaaatct tttcctgtcc ccggaagcga actttaccaa gggcttcgag     1740
aataagattg ggatataatg ttactatgcc atgttctgag taggttattt attaggaagg     1800
aactgcctga cttttctgga gcgattgtaa ctgcggtagc tgtcaggttc gatttcaata     1860
tcggttctcg atactcgcag tcaggttctc ccaagccaaa gctgatgtac tgatcgtcag     1920
acctcgttcc agccactgtt gttcgtaata tgttcggatg cgaggatttc attctctacg     1980
catcctttgc cgtacagatc atccgttatt cgtgtacggg caggccgttg agttcgacca     2040
acgccttcgt ataggtatga ggaaagggct atccgttttc agatggatac gtcccccct     2100
ttcgagtctt tgtcatagag cgagaggaac cgcgttccgg tcagtcgctt gcctacttct     2160
tcatctgcgg atcggggaaa gtgatccata tttcggctac ctctcttcgg caaagaaccg     2220
atccaaaagc tctatatccg tccgaaggaa agctcgttgg acatcccttc ttgaagagac     2280
tctttggcac cggcccacat gcggctcctt tgatgtcgat gccgataaaa tttttctccg     2340
gaaaccgttt gccagaacct accgtatatt cttccttctt ccggaaccc                 2389
```

(2) INFORMATION FOR SEQ ID NO:1293

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 738 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...738

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1293

```
cttatgggaa tccctccgaa tcatagttcc cgaggagaaa agaacattat cattgccggg       60
gattaatacc tgcgatttat agcgagtctg ccggcattca atcttcctct ttaggatctt      120
acatcacatg tcacgttgca gaaattttgc atttgtggtt tctaaaaacg tggcgcgtaa      180
acttttttcat tttggccgag aagtaaaaaa atctcgagcc aaaacgaaaa aaatcatgcg      240
ccacttattc cataaaatcg aaccgaaatc aaagtgtttt aggctcgtac tccgagacag      300
tagttcacaa gcatacagga gaatagcatt gatgtggaat caagtatctc aatattgaga      360
```

```
gcgttcgatc ggtcaaaaga aacactctat ctccaaaatt caaatttaca tcggtttatt      420
gctgctcctt ttgcaaagtg gtttgacaaa tcgtatggtg agcaaattgc ttagatgaaa      480
aaaaggataa aggattagtc tggttgcatt tttttattta gttttgtggc tgtccgtata      540
tagagcagtt gtggaagttt cgtgacttgt gtctaaggcc ggtagcggtt tttgagactt      600
cccttgggtt agggtaaaac cggagaagaa aagaaaaaac atancagtaa taattttaag      660
tttaacgcat aagaaaagtc tatgaaagaa tgacgctatt cttcctttgc ttgctgacga      720
cattggtggg ctatgccc                                                    738
```

(2) INFORMATION FOR SEQ ID NO:1294

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 386 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...386

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1294

```
atcgtatcat tcctaatcta ccggatagga atacttttct tctgaaccga taagcccata      60
gatatgatac agaatatcct cacagccata acgggtatgt cgtcctcggc ctgattattt     120
atcgtttggt tcgtctctgg aagcgaaaga ttcgggtgga gcatgctccg gttgttcatc     180
caaatccgat tgtgcctatc ttccaaggcg acagagaaga agaacaatcc atcatccctc     240
aaataaactc tcatgaaaac aggacggcaa tactatcccc tcagtatccg gcaggaatct     300
tctctatcct cattatttta ttgatagtct ttgctctaat accgcttggt acaacggcat     360
gtgggttttg gtagctgcct tgtggg                                          386
```

(2) INFORMATION FOR SEQ ID NO:1295

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 943 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...943

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1295

```
aattggagaa tagtgctgca gcagcagtga agcctttacg gacagatcca tggaagggca      60
gattcaatta caaaagacca agcgcgaatt caaaggaccc tgactttggt ggttttccct     120
tttgtcaaga agtctcgaaa aagtcccaag cgactgccac ggaaatagga gaatggttgc     180
ttgcaaacga gtcggcgtat ctgccatcga agtggtaaag ggctttctca atctgaccat     240
tgctcgaggg tatggttgga gctgctgaac gagatccgag cggatatcaa cttcgacata     300
aggtcgctac agaggatagc ccgctggtaa tggtggagta ttctctccga ataccaataa     360
gccgttacac cttggacacg tacgtaacaa ccattgggtt atagtctttc cgagatcatg     420
aaagccaatg gctatcgtgt gtgaagacta atatcgtaaa tgaccgaggc attcatatct     480
gtaagtccat ctcgcttggc aaaagtgggg agatggtgtg acgccggaga aggccggtag     540
aaaggcgatc atctgatcgg agacttctat gtccttttcg ataagcacac aaagccgaac     600
tcaattccct tatggctgaa ggtaagagca aagaagagcc gaagccgcaa gcaccctcat     660
ggctgaagct cgtgagatgc tacgatgtgg gaggcaggag acgaaaaggt cgtcgatctc     720
tggcgtacta tgaatagtgg gtatacgacg gattcgatgc cacatacaag atgatgggtg     780
tagattcgac aagatatact atgaatccga gacctatctc gtcggcaagg aagagtgctg     840
aggggtttgg aggaaggctt tgtttgtcaa gcattccgat ggttctgtat gggcggatct     900
tgacaaagga tggcttggat gaaaaatgct ttgcgtgccg atg                       943
```

(2) INFORMATION FOR SEQ ID NO:1296

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 2483 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...2483

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1296

```
tgagttgagc ggagagaatc acccgatcaa actccgnacg tgtctggtat tatacccgat      60
cttccattcc gtggatgccc gtagccgccg gcgcgtttgt cagaaatgaa tgggaagagg     120
agacgaggga aacggagcga gctttccccc catattccat gaagctgtgc gaacccttgc     180
gaatggcttc gtaagcccct tgagtttgat attgaacatc tccgccccac gaaacaaatt     240
gcgatggtga aaccgagaga caaagccgcc ccgaagtctc cagcggaatt ggtgcgagga     300
cttcggcttc gaacgatttg ctcttggccg gaacggtaag aattagcagt ccacaaggcg     360
agagctatcc gccagagcaa tctcatcctt acattgtgct ccacaaatcg gatattcacg     420
ttccgaacga tagggagcgc atcagcttga tataagagcg ttccacatca tcctcgcaga     480
aaaaagctcc ggtgtaacgg acaccgaccg cgtgagagcc gatgcccgga tataacgtcc     540
ctactcccat agtaaacagt gtaatcgcca cgcgaaatcg aatcgatagt ggcagctcct     600
gaactctgaa gtccgattcg agaggatcat aatcgggatg aaagaatacc ctgccgatcc     660
gatatggata acgcccgatg ccattgccac taatttcaga tcggcagatt cgtacccga      720
tcctcctgaa acggtgtatc tgcttcataa taaacatcct cggcggagaa cttccagaag     780
ccgtgttgcg catatgacga gctatcgcct ttctctcttc atcgagtacg atggcgacaa     840
gggagaaccc tcgctgatcc cgaccttgta tgccgaagga aggaattgcc aagcgcaacg     900
ggaggaagga gtggattctt cacatccaaa gcatattgcg tatataataa cggcttccgg     960
gctgaatcag ataagtaatg gagctttctt gtacaagccg gtgtctacca cggcacgagc    1020
agtagcatca gaaagccatc gccggccatc gcctttgcca gacggttggc agtacgatgg    1080
tgaggacaga atcgatgagg acaggcggtt cgcccatttt ccggagcaac ggttccacca    1140
```

```
gctgttgctg ttcggattcg agctgctata gacgcgagta gccagcgagt catcccgaac    1200
agtctgtaat tgggttgctg gagggatagt cccgaatatc ttccggcaga gcgatactgc    1260
ccgtttcgct tgcgtcgtta ccctgtctaa tagtctgcta ccgtccggca cataacgggt    1320
gacgagcagg aggaagcaag catgaggagc aagcagccgg caatgccgat taataccgaa    1380
cggaatgcga ggacatagga aaacggatat acggggagag aactatcgtt cgttccagat    1440
acgccaactg cacaacgcct gtatgagcag atctccaatc cgttctgcac agaagcaccc    1500
tgtgcttgag cgcgatgcag aagatcgttt cctgcggatt atagatcaga tcataacaga    1560
gatgctctca cctataccct cgaacggaat agacggacat tggtctatat gtggataata    1620
cccaccggag tggcattgac gatcagcttg tgccgttcga taatctcggc gtcagatccg    1680
aatatgcata cacaccggga gccgaaggcg tgcgatgacc tgccgatgta ctattcccat    1740
cttcttcaga gcgcgcatca cagcagagct gccccacccg atcccaagac gagagcttgc    1800
gtatgccacg gcttcggatc agctccaggc tatcggcaaa gcctttcaca tcggtattat    1860
aacgacgaga tggggacgac gaaagcgcgc acgttctacc cgaatcgtat tacggctccg    1920
gtcaattccg cttcctcgtc tatccgatcc agatagcgca cacctccact ttgtacggcg    1980
atgtcacgtt gaacccctga agagagggag gagcgaaagc agactcttca gttgggagag    2040
cgactccaga gggaaaagtc gtagacggca ttgattccct ccgtcttgaa tttggcgttg    2100
aagaattggc agacagcgaa tgagccagtg gatagccgat cagaccgtac tttttctttc    2160
agtcccatat aaacggttgc cacctccaac gaaaggctac gataaacgct tcccgaaatc    2220
cgacagagag catcaggtcc gccagttctt cccgtgaggc atggctgcta tcgattcggg    2280
aagataggta taggcttccg catctgtgac aggaaacgac cgacaaccgg tatcacatgc    2340
gaagcataga agtgtagccc tgcttccagg ggaaactcac cggacgggaa agctccagta    2400
tatcagagga gcaccctcat tgagcacacg atacatttcc tccagaccga cttgatattc    2460
tgaaagttgc gcaagccgaa agc                                            2483
```

(2) INFORMATION FOR SEQ ID NO:1297

       (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 187 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: double
           (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
           (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
           (A) NAME/KEY: misc_feature
           (B) LOCATION 1...187

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1297

```
ggcgatgatt tgtgccggac cggctttgaa aatctttagc actctgtcca ctcatccggt     60
gtcggtgtga gttcgcttgc accgatggtg cgggcatctt gacttcgtcg atcatgaaat    120
tcagcaactt ggcttgctga aatcgtcgat tcctacttgt tcgatcatgt aagttttgac    180
ctataga                                                              187
```

(2) INFORMATION FOR SEQ ID NO:1298

       (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 915 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: double
           (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

       (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...915

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1298

agcgcaatct gaatacggac atcaaggtag accccaacgc cgtagtgata tatcgaaaga   60
cacggctttc gtagacgaaa gcggcaatat catcagcgaa ccattacgcg tccgcttagc   120
agcgaatacg attttctcaa cacatactcg taccgatcta tcccgatgag acctgctggg   180
taaatgattt ccccaagctc gtaccgagat ttatacgaga atgtatttca atcacccggg   240
ctacgtgatt atcccgtagt aggtatttca tgggaacagg ctcaggcgtt ctgtcgtggc   300
ggtcggaatt cttccgcaaa ggtattcgct tgcctgaagg acaatcatgg acgacttccg   360
tctgcccact gaagccgaat gggaatatgc tgccgaatgg gcgattccaa caataaatat   420
ccctggagta ccgaagactt gggacaggac ggggttgttt cttgggcaac ttcaagcccg   480
gggagggaga tatacggctg acggtcattt gataccgtcc cgcgtatcca gtttttcgcc   540
aatgacttcg gcttgtacga tatggcgggc aatgtggccg aatggaccgc acggcatttt   600
cggagtccgg actcaaacaa atgtcggaca tcaatccgaa ctggaataca aagctgcgct   660
cacggatccg tacatcctga agcaaaggta gtacgcggtg gttcgtggaa agatgtggcc   720
cgcttcatcc gctcgctact cgtagccatg aataccagaa cgtaggtcgt tcctatatcg   780
gattcgttgt gtaccgtact tccattgcct tctcttccgg aaaggctcct taaagttcgc   840
gtcgcaagca caaaggaaat aagtattcgc ccaatctata ttaaaacaag gaaaaacaag   900
tattatgggt catta   915

(2) INFORMATION FOR SEQ ID NO:1299

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 969 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...969

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1299

ggtcatactc cagtttcgac cgctgcggaa accatataag gttttgaagt caggttggtc   60
cagtaaaagc agaattagag gcaatgcccg atacctcagt agaataccat tgctgaagcc   120
ggctcccaca ctggtcagta cgacgagatg aagataccc aaaatacacc gaaggctgtg   180
gccagactgc gtctgcattg ctgtagatcg tatgccagat ctctatccaa cgatctctat   240
cgaaaatctc atagtctcct ttctcctcct tcgtttagtt tctcatcgcc tccacgcggg   300
gattcgtacg gctttgcggg cgggttggta tcctgctatg gcacgcttac taccatgact   360

```
atcagagcta atagggcagt gctcaggtcg atctcggatc gcggaagagt gtcagcgtta    420
ttccttctac ctgtctgctc cgacaccggt ggtctgtacc caatgcgata cgaactccat    480
cagaccaacg cggccaccaa gcctatcagt ccggaaaaca gtgtgaccac taccgcctcg    540
tcagaatcat gttgatgata gctcttggct tggctcccag tgctttgcaa tgcctatttc    600
gcgctgtctt tcattgacgg tcacttgcat gatattgcca ctccgataat tccgatgaca    660
agggtgctca acccgataat ccaaagaaaa catccatgcc attgaatatc ttgtccatca    720
ttttttatgtc cgtcacggtg catcgacata gggcacttcc atatcggtag gatcatagcc    780
cttgggaagg ccagttggcg attgagtagt actttgagtc tctcacgttc tctagttcgc    840
acagacggca gttcatgaca gtgtgcagtc cagactgaac cttggcgaaa atacctggat    900
aggtggcgaa aggattagtt gggctgaatg cctgtcgcct tgcaacgcta cacgaggaac    960
ggatttgga                                                            969
```

(2) INFORMATION FOR SEQ ID NO:1300

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1267 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1267

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1300

```
aagtcctccg gagccacttc atatatgctt aagtcctcca tcttgtcgag tcgaatgcta      60
taatagcctt gagcaaatac tccggataga tgtccatcgg aaaacgcggt catactcgtt     120
gctcatgatc atagcacgtt cgccaccttg atccgggcat cgagtacgta ctctttgttt     180
ttcccctgca accaaggaaa taagctctgc tcatgctgta ctgatcgaga cggggtgcag     240
cccaccgaag agttcgtcca catcgtcgcc ttcggggatc accgtgatct ggtccaccgg     300
gctgacagga aaggctcctt ctcgcagagc ttcttaccgg tcacacattg ccatcgatca     360
cacgctcgtg agattccttt attgtcagtc ggcggggaag gaagcaaaga cattgcaacc     420
cggcataata cggacgtatc ctgagctgca gcgtctgagc cggtcatggc aatcattctg     480
gtaaaatcgg tttgcccgta agcaggaaac gtccgatcac gatcaggtcg gtagccttgg     540
cgtccacacc gtttcgcccc gattgattgg cttcgtatga ttgatcagac gcccacgtta     600
cctgccggat gaggtccgtg tacttctacg atttctgatt gtgcaagccc anagatgaac     660
ccggcttcag gcccacatac acctttctgt cgtgagtttg gccaaggcat cgatggcagt     720
ctgcagggcg cgttctctcc tcgaacgatg aaatcgaagt ccggagccaa tggtgcagta     780
aagtggcagt aatataaatg tcgcgtggag ctatatccgg tgtagccact atgcgtaagg     840
acgttgctta ataaaacccc acataccgct cgacagtaaa agtccttgat ctgttcggca     900
gagagggcag acggatcccc gacagggaat gctcgtattc gttcagtccg tccggtttca     960
cctcgatgct caacaccttg gcttggcacc gcgattcacc gcgatcactt cgccgctaac    1020
cggacttgta acttcatctc cggatatgcc ttgtggtgca tcaagtgctg agccggcagc    1080
accttatccc ccggacgagc cgtcaccttg gggataacac cttcaaatcg tcgggcacga    1140
ccgcgtaagt aggactttgg gcccggttcg gncagctctc gggcagcggt tttcctttca    1200
gattaagtgc aagggctttt tttggtttta taacttttgn catgacacag aattattatt    1260
tccattt                                                             1267
```

(2) INFORMATION FOR SEQ ID NO:1301

(i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 793 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...793

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1301

```
cgacaaagaa ttaagaaggc gattgactac aaagttgatt gccttttttt tgatgactgg      60
ctcaggcgtc aaatcacgaa agcaaaagag gctgtcccat agagtcaggg ggcagcctct     120
tcaggatcag tatattttgt gtctctgtta ttcgggacga gagcaacggc tatagaatgt     180
gagttcttcc ggacggaagc gcgcacgtag ctgtcgatct tctcctgctc agcctgaccg     240
taacgagata tacctctgcc gactgacgga atgaatcgtc gtcattggca gccacatcag     300
cagatggccg aagactgcat gagcagtcat ctctacaagc cgagtgcttg gaaatcgagc     360
agctcctggt ctttctgttc tgttacgaat gcatcagtgc ttcggcacgg tcggtcatac     420
gagccagagc ctctttcatc gttgcaactc tggcttaact tctgtctgct ggtactcttc     480
acggatacga cgatataagt gcctgtcgtg atatggcgaa tggctgctac gacctgcaat     540
gtgtggtacc ttcgtagatg tttgtgatac gtacatcgcg gtagagactt cgcaggtgta     600
gtccttcatg aagccgctac caccgtggat ctgaacaagt catagacatt ctgattggca     660
aactcggagg tcattccttt gcccatgggg tataggcatc tgccagacgg ctgaaatgct     720
tcattttccg cacgtcttcg gaagtcaatt tgcgctcgtg gctgatatcc tccagcactt     780
tgtaatatcg aca                                                        793
```

  (2) INFORMATION FOR SEQ ID NO:1302

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1150 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1150

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1302

```
agatgcagcg gttttttaag actgctccgg gcgaatatgc tgagggagac ttttcctcgg      60
aatatccgtt cccgacattc gcgcttatga gaagacacta ggccttggag ggtggaaatc     120
```

```
ctcgctcttt tgctgcaaca gccttatacg aggtgcggca tctcgcactt atcggcatga      180
ccgaactata cagacggctc ggtcggaagc agtacgggag gggctattag cctcctatct      240
gagcctacga ctatgatcaa taactgggat ttggttgatg tatccgcacc cggatagtag      300
gcgaatatgt ccatgctcat cccatcgagg gcaatgcctt gctgatagat tggccgattc      360
atgcttgttg tgggaacaac gaatagcgat ggagccaatt ggcgactgat ccgatacgga      420
gagtacgaag ctaccattcg cttgccgagc gattgctcca ccacccacac gatctcattc      480
ataaagcagt ggctggatgc tgcgtgagat gggtaaaaag caagaacggc tcctgcttgt      540
ttccttgaca aacatgccgc cactatgcca cggacagctc tccgctatcc atggaaaagc      600
tcccgtccga tctgcgctct tactacctga ccaaaggaaa taatctacct ataatttta       660
tatatcattt ataggcggag ctgcgaaaaa gaataagccg agcaaaataa cagacggaat      720
aaatcaaaaa taaaagcaaa tattgagtca atatctgcct ttttctcttt ttccagtcgg      780
ggtgctggat tcgaaccagc gaccacacgc cccccagacg cgtactctaa ccggctgagc      840
tacaccccgc ttgcttattg cgttgcaaag gtagtttttt tttttaccct ccaagagttt      900
cgcgataaaa atcgaaacat tcgtgcaaca tttctccgtt atctcacatg gttctgccgg      960
taagcctatc cctttaagtg aataagcctg attttgctcc ccagattctt cttgtctttc     1020
atgcaaaaac cgtcagagac ggatattgct tgcaggtgaa aaagaagggt gagtagtatc     1080
tttggaccat gcgaccagcg agtagaggat ctctcgaggg aaaccattgc caccaccgaa     1140
taatagagtt                                                            1150
```

(2) INFORMATION FOR SEQ ID NO:1303

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 548 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...548

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1303

```
ggcgaaatag atgcggagct tatcgccgat cttgagatga agtttgtcgc agtaacttgt       60
ggcagaagaa taggattggg taccgtatcg gcagaactaa gctcggataa tttcccgaaa      120
cggtttgacc gaagagcgga ttgcgagtcg gagtgaattg tcccccatca gtagaatacc      180
ggcaaaagca ctgtcttctt ggcaacacct gtcatttcga tcgtgggcac tacccggtcc      240
acacctcgac agaggttata gcttcaagca tcccgaccgg agcattgaaa tgattgaagt      300
tccggccacg ggggcaatgc atagatgtcc cgtatagccg tatccagact gcggatattt      360
tgtttgaagc caccagctat cgacacggta atagcatgac catcaagctg agcatgatac      420
cgatcacaga gagacgaaca aaggggctat tcctttcccc tctttccctc cgcccctaaa      480
gagccgtccg ccaaaaagaa atcgatcttc atcggccctc taccctattc ttctatcagc      540
ggagaaaa                                                               548
```

(2) INFORMATION FOR SEQ ID NO:1304

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 707 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...707

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1304

```
gcccggtgaa gtttccaagc cttttattct caaaacggac aaaggtaata ggaggttgtc      60
atcgtgaaga tcaaaaatct gatcgaagga caccgagcaa catgaactcc gatttccaaa     120
cgatcaaggc cttagcccta aacaaaagaa agaaggagtt gtcgatgcat ggataaggaa     180
gaagcaaaaa gaaactatat ccacatcgaa cctgcctacc gcaactgtca gttccgctat     240
ccgggtggct tgaagacaga caataattcg gggtggaaag aaaatctctt tggaagagag     300
tttctttctg tctcgagtac aaatagatga gaaagggaga aaacgagaat ctcggctcgg     360
tagccgacaa ctggggcga taattctgat cgcactctct cttttctgc ccttgcctct      420
ctccaaggtc cccctcccaa aggagtaagg ggaaaacgca tgtcatcctc gaacatgccg     480
atgaactccg tacgacagac tctacaaccc cgatgtacag cgtctgcttg gcaatgtcgg     540
atcaagcatg aaggagctgt gatgcgctgc gacagcgctc atcttaatag gaagagaaca     600
ctttcgaagc attcggccaa gtttccatgc agcaggcaca ccgtatcatg tcgcccgtat     660
ctcatatgat ggaacatcaa atacgccgtc ttcgccatga gtgcgct                  707
```

(2) INFORMATION FOR SEQ ID NO:1305

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 397 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...397

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1305

```
cataagagca aaaacgattc gtcaattttc ctcaacccaa acatctcatc ggggaacgga      60
ttcggggatc aaaaaaagaa aaccatggca tctcgactac ttcctgccac aagagaaaaa     120
tcaaggggga gccgcaaatg aaatactgcg actcccctt acttggtttg agagaaatat      180
cagatactga aagctatgta tggaagaaca acagtcctat agtcgcaata gcatcatctt     240
cttcaattat tagttgacta caactttcct tacattgcta ctcgtggcag gacttgcaga     300
ctgacaacgt agactccatc gaccaatggt tccgtcatag actacttccg ggttttacgt     360
ccaatcgaat cagaagtttt ccgtcagttg gaaaaca                             397
```

(2) INFORMATION FOR SEQ ID NO:1306

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1121 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1121

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1306

```
gtatccaata cgctcatttc catgattgta atcttcctgc tactcaaaac gccggtatga      60
aagacgggtc ggccaatctg atcggttata tagcaggatc atcaacagct tcatttggaa     120
tcgtaaatgg acattccgga gccggactct tggaggcaaa cattcgtacc attcatcctg     180
atgttcgtaa tatgcttgca ctccaatacg gacttttgat gtggctcaac gaatactcca     240
cctccacgac aagtattaca accacctgat aggaatggcc tttttcacca ttataatttc     300
cttgccaata agttcattac attcggcaaa gaacggtagt gcgtatttgg acaatagaga     360
aaactcttta tctttgcagc gcaataaacc aaggggtatt agctcatctg gctagagcgc     420
gacactggca gtgtcgaggt ggcggttcga gtccgctata ctccacccaa aaagaaggtg     480
caaaccggca tcgatgcagt ttgcaccttt ttcttttgtc cccatcggat gcttttcctc     540
cgtccctatc tcgacaatct tccaaaagaa aagccgaaag accaataacc ctatcagcat     600
aattacgaaa gacagaagtg attgttttag aggcactaga aggaaattgt atcgtttccc     660
caactccctt ttggacattg acacagggct gaaaaccatg gccaaaccaa agtatatagt     720
ttggctttat caaagatata gtttggttcg accaaagtat atagtttagt tcaaccaaac     780
tataagttta gtttcaccaa agtatatagt ttggtttgac cgaactatat agttgtttca     840
ggagcatttt gagctttctt tcctcaagat ataatgcact ataatcaacc tcttatttct     900
tctttcctgt aggatgtcat ttttgactgc gcatacactt ttgccttccg ccatcttccc     960
gcaaagggaa tcgtaccgga agcaatttta cccggaaact ctataaactc acaatgtgta    1020
ctataatctg ggtagatttc ccgataggca tgatccaata gaatggttaa acattccctt    1080
tcgttggggt tttcttctcc ccaaatacct gtcaaaacgg a                        1121
```

(2) INFORMATION FOR SEQ ID NO:1307

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 772 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:

```
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...772

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1307

gaatttgtgg gcctaagaac cgcaatcatt ttcataagaa atacctccgc ctttattaga        60
ccaggaaaag atcgaaatga ccattcctga aaagccccaa gtaagaacca gaagtatcga       120
acgaaggaaa caatcaaatg atatcattcc caaaaggttt ttcaaaccct cgaaagagga       180
aataatataa tcggtgaggg gttggaaagg tattcctttc tgaccatcag gacggttgta       240
aatccagttc ccgtcctgct tttatttcgg aagcgggatc atcgcctgcc acatggcttt       300
tcggtctatt aagttcggtt ctctatgctg actgtgataa agatatccgg acaaaataga       360
gttctatcct cctgtagaat gtataaagga ttggagaacg actaggctgc tttgcaggaa       420
tcttttatt acggaaacaa atttcttcg gacaactttt gcttcgcatt aaagaattac       480
agcagcgatt cgaagtatcg gcacaacggg caagtagaaa gtttttgcaa aatattctat       540
tcctaagggc gtaatcgttt tccatattat ctctcaaaag gtctctcagc cctcgaaaga       600
ggaaataata taatcggtgt aggagttgga aaggtatcct ttctgaccat caggacngtt       660
gtaaatccca attcccgtcc tgctttattt cggaagccgg gatcatcgcc taccacatac       720
gtctttcggt cttttggtcc aattccctgc ttaattcacg gaagatatcc ag              772


(2) INFORMATION FOR SEQ ID NO:1308

      (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 781 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...781

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1308

ttttaatcat gaaatctgca agtttcttgc cataaagata agaaaacttc agattcatca        60
taggttttcg caaactaatt tgctcaatat cagagagtaa aggattctta agggacgact       120
acatagtctt acacagctat ttctcgaatt gggaagttcg agtccgtagc ctttcttcac       180
atcggcacct ttcagggaat accgaggata aaggcgagga taccgaacga agcaaaaacc       240
agcatgccaa agtatagttc ttcggttcgc cggctgcaac acccttattc gtgggtcgag       300
gatggctccg atcacgatgg gaacaaccat caagccgata ttcgaataaa gaaaatggcc       360
gaataagccg agccaagtac tttggggtcg atatcttggg taccgacggc cagagagcag       420
caggtaccaa agagaaagaa aacccagtac gacgatggct gcaatggcta tggcaagaga       480
agaagtggtg cgctctcaaa ggggaaaatg gcgaatgtca ggtggcagat aaacatcaga       540
ctgctccgac aataagcatg gtggctcctt tcccgacttt atccaagatg cgccgaggaa       600
aggcgtcagc accatggctc ccaaggggaa catactgaga tacggcagc tccttcggcc       660
gtcagaccga tatttggact gaagcacttc ggtggcaaaa cttcttgaaa ggggaaaatg       720
gcttgaatag taaagacgca caggagggca acattccaga catgctattg ccgaaccctg       780
t                                                                       781


(2) INFORMATION FOR SEQ ID NO:1309

      (i) SEQUENCE CHARACTERISTICS:
```

(A) LENGTH: 630 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...630

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1309

```
cctctgcttc ccgtacagcc gtatgtgcca aaagcgagaa gcctgtaatt cacctgcagc      60
atagacattg ggcagggaag tttgcatcct ctcattagct ttacaccttt gccggcaagc     120
accaatccga gcgactcgaa tccttgcgca cggggcgacg tcccacactc atcaggatac     180
gttctccttc gatctcttgc tttctccttc gtattctacc gtaacagctc cgttgcgaac     240
cgatgtactt tgtgcccgag gtagaatttg attccttctt tttcatagtg agcggtagca     300
tagctgcatg ttcgggatcg ataccgttga gtatttccgg cagatctcca ccacgtgcac     360
ttgcgtaccg ataccgttga agaaagaagc gactccattc cgatcactcc accaccgatg     420
atgacgagag aggtcggaat cctttgttct gtagagcttc acggtttgtc caatactctg     480
tctgctccac ccggggatgg gtggaataaa cgtctccgaa ccggtacata gtagcaggtg     540
gcagctttgt actgtgcttc gcccgagtaa tgccgatgat gccgtctgat cgcatcccgt     600
acggtagctt ctgccgtcac atctctactc                                     630
```

(2) INFORMATION FOR SEQ ID NO:1310

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1371 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1371

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1310

```
gatcgatttt gttcttcgtc gcgtgcggag caatccccga tctttcggtg agtacaagtc      60
ctgtttatcg gtgatcttat gcagcttccg ccggtagtaa accgcatgaa tgggagctaa     120
tgtcagcaat ctatcaaggc gtttctcttt tcattccatg gtgattcgtc agcatccgcc     180
ggtattcctc gaactgaaac catataccgg cagacagatg tacgctttac gtccttgctg     240
aacaactgcg ccacaatcgt ctgccggcag acgacttgac ctacctgaag gatctgtgaa     300
tccgactttc gacagcacct gtcacgaagg ctatattacg ctgcaacgca taaccacaaa     360
```

```
gccgatcaga tcaatcgacg cgctttggaa gcttacctgc actgccccat tcctaccaag      420
cgatcatcaa gggcgatttt cggaacatct gtatcctttg gagccgacga tgacgttgaa      480
agaaggtgcc gagtgatgtt cgttcgcaat gatactcgcc aacctagacg ctactacaag      540
ggaaaatagc cgtagtccac tccctttctc cttcctcggt ggtcgttcga ctgacggcgg      600
agagcttata gaggtagagc cacacgagtg gaccaactcc gctactccgt gaaccccgag      660
accaatgccc ccgaacagga agtaatggca gcttccgcct ttttccgctt cgagccgctt      720
gggctatcac cgtgccaaga gccaaggact gactttcgaa cacgccgcca tagatctgga      780
aggttcttcg ttcccggtca ggcctacgta gccctgtcac gtatgacggg cccgaaggaa      840
tgatactgct ctcccctccc gatctgcgtg ggttggaaac tcccaagaac tggtcgaata      900
tgcacagacg aagcccgacg aaaaagaact cggacttctt tgcaggaaaa cagtcttatc      960
tattggaagc agcaatccga gaggctttcg actggcagag cttgttgaat atatggcaca     1020
aacacagtcc agctatcggg aggagagcga gctgagcagc aaaagccatt acagcgatga     1080
gcagccgaac aatcggccaa gatagatgcg atcacggaag tagccggcgt tttcgccggc     1140
aacttgccgg cctttggggg cagtctccgc ttggatcggt gccgtcaaag agcgaatcga     1200
caaagccgtg gactatttcc tgccaaactt tctgccatag caggcgaact ttcctccacg     1260
atccaagaag tcggatgctg aaaaaagcca aacagtttgc gaaagaactg ctcgagctac     1320
aggcaatctt cataccgccg tgtaccgcct gcttcgctta cgagccgttt t             1371
```

(2) INFORMATION FOR SEQ ID NO:1311

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 714 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...714

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1311

```
acgtttttag gagcatgaaa caaaaaattt cacgaacgta aatgggacga tcgaagtttt       60
acttcggtct cgtttttcat ctctattcgc ctatgaaatc ctaaggctct cttttagaca      120
aaaaatcttt ggccaaaatc cttctatggg agcatcgagg aaatgaagtt gcagtcctcg      180
gtcatatacc taatgaatag gggagtggat cggatcggtt tgctccctct cgaagagagg      240
tttcttcccg tttcggtctg ccttatgaga attattcgaa gcagtcgttg gcggtttaag      300
gtgtttcata tacctttgcg ctgcaatgca atcataaaga ctgtttctcc atgttggaaa      360
agctcattat tctggatttc ggttctcaaa cccacagctc atcgccagac gaattcgcga      420
gctgaacacc tactgcgagg ttatccctac aacaaactgc cggaagacct ctaaggagtg      480
cgaggcatca cctgtcgggg agcccttatt ccgtgtatga cagcaaggct ttcgtatcga      540
ctgagccgaa ttacgggcca agttgcctct ctttgggtat ctgttacgtg cacagagcct      600
tgtccatcaa gcccggtgca aagtagaagc cgtgcgaagt cgcgaatacg ggcgaacaca      660
tctgaccctc ggcagcctga tgatgcctgc tgacaggcct gcaatccggc ctac           714
```

(2) INFORMATION FOR SEQ ID NO:1312

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 690 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double

(D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...690

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1312

```
gccgaaggat tcgacgggct gatcctccct gcggaaaatg cacgtgaaga gccgtcgtga      60
acaacctcaa tgtctatggc gtgaagcata ttgcagaatg atcagccatt tcaatggggg     120
cgatcagcta cagcccacta tagtcgaacg cgcagggaat ttttcgacca tcagcagcag     180
gtgtctttcg acttttggag gtgaaggggc aggagaaggt caagcgcgcc ctcgaagtgg     240
cggcccaggc ggacacaatc tgatcatggt cgggagtccc ggcagtggga aatcatgatg     300
gctaagcgaa tgcccggaat tcttcctccg tttacactta gcgatcgctc gaaacgacca     360
agatatactc cgtggccggt aagctgggag tcattcgatg ctcctgaccc aacgcccttt     420
ccgctcgccc caccattcca ttcttccgcg gcactcgtgg gtggcggcac ttatccacag     480
cccggagaga caagtctggc gcacaatggc gtgctctttt tggacgagct ggccgagtta     540
accgctccgt tctcgaggtg atgcggcagc ctttggaaga tcggcagaca ccgttttcga     600
gagccagaat gacggtggat tatcctgccg gattcatctc gtggctgcca ttgaattcct     660
gtccttgcgg ctactacaac cattcccacg                                      690
```


(2) INFORMATION FOR SEQ ID NO:1313

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 524 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...524

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1313

```
ggactatgcg cacacgccgg atgcactgat caatgtattg gataccatag accactggca      60
aaatcgcaca aggtgatcac agtggtagga gcaggaggaa tcgggacaaa ggcaaacgtc     120
cgatcatggc aaaggaggca gcccgcaaag cgaacgtttg atcctgacat cggacaatcc     180
gcgtgatgaa gagcctaaga aataatccaa gaaatggcta tcggactttc gacagaagac     240
aggaaaaaac actgctcatt actgatcggg cggaagccat ccgcacggcc tgcagctggc     300
agagaaggga gactttgttt tgatagccgg caaaggtcat gaacttatca ggaaatcaga     360
ggtgtcaagc accattttga tgatcgcgaa gtgtctgcga tgccatgtcg aaagatcgta     420
tcgttcaata aactctatag acccatgttg tactatctgt ttgattatct cgaaaagcta     480
```

(2) INFORMATION FOR SEQ ID NO:1314

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 539 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...539

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1314

```
gcaccggcga cgatgacgcc cgagcaggct ccgatggatt ggatgatcaa ttctgcccca       60
gcatatttcg gcgtcccgaa atggtgccga tacctacgcc aggatggcaa tgggaatggc      120
ggcttcgaat acttgcccga ccttcagccc agataagctg cggcagcaga gaaaataact      180
gtcatcacca aacccacagg acagaatagg aggtaatctc gcgcggcgta ctgccggcag      240
gcatcccggt tcgtactctt cgcccggctt cagctcccga tatgcatttt cgggagcttg      300
ctcgttgtct gtttgttttc catataatat atgtgtttga ttgatcgttt tttgcaccgc      360
cctccgatcg caataagagg gcggagaatc gtctgaaaca aagcgctcaa atatatacaa      420
cttcgttgaa aaccggtcct tcgatcggac aggaagcccg atcattcccg gcagtatatc      480
cgtgcgatgc cttcggagtc gatagactac agaccgccgc tttcgccgcc gccttgctc       539
```

(2) INFORMATION FOR SEQ ID NO:1315

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 626 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...626

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1315

```
cagtgtttga attgactctg atatgccgaa aaatacgaaa aaagtcgaaa gaatcaatat       60
cctccgacaa tcaacgtgaa tacaacaatc aaaagtaaac agactcttct ttatctctaa      120
```

```
tccctgagat ccagaaagaa cgcttgtatg gcaggtcttc tgacttattc aaggcttcgc      180
tgccttccca tacgatctgt atagtggctt tctcgtggca aaacccttac atctgaactt      240
acagcgaggg tacagtccca gaatttcact gggttccctt ttcattctac actcatgaac      300
cggtgtagaa aaccattgac acggcaaaga tattcattat atcatactag tgcggaaaat      360
tgaagaaaaa aatatggatt tgtttgagga tactttcagt atacgtcatt aaggctaatc      420
gggtgtgaaa tgccgctgat atttatgtgt tcgtgtgtaa ataaaaactg aggctgtctc      480
gtcatgagac gcctcagctt catttattgg taggaatatt tgggatattc cgctgcagta      540
ttactacaat ccgattccaa gcgttctctt catagatttg ctctgatggc ccttccttca      600
atggtatgcg atccgcagaa caccat                                           626
```

(2) INFORMATION FOR SEQ ID NO:1316

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 967 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...967

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1316

```
ggcttatgct catttatagt atagtgcatg caactctctg aacaaaagga ttgaaatagg       60
aatcaggagt acttttgaca gataagccca agtatgcatg ggatgatcaa gtctcgatca      120
acaataaatc agtgtaagca tgctgtcgga ttcagcactt cggccgcaat ctcacggagc      180
cgatcggagg taatggatcg atacgatgga aaatatccga aaggggatcg tatttgccat      240
agagggcata ctcttgccca atgaaaggaa tgtggactcc ttattgtcag ccgaacgatg      300
agctgtcctt tgaactgtcg cttggcagat tccagttcta tcgagaaaga gggtgttcga      360
tcaaatagcg caactctttt ctgacaagct cctggctgct tccgcatatc ggggagcgca      420
gccgaggtag atattgaaga ccccgtatcg gaatagggcg tgtaattgct ctctacgtta      480
tagacatagc atgctcttca cgcagtgaga gattgagccg ggagttcata cccggccctc      540
gaggatatta ttaagcagac ttagcggaat gcgtctgtcg tcgtggagga atacgccgga      600
ccgcccatga ggatgtgatg ctggtaggta tccttgtccg tctgatggta cgcggcagaa      660
agccttctct gagggtatgg agaggatacc atcggtatta cggatggaga ccttctcggc      720
cggattaagg ggccatcgga caggtctgct tctccggcca ggaagaagat catattgtcc      780
ggccgtagtg gcgacggagg aagttacgac ctatttgtcc cgtgatgcgt gatcagaagc      840
ctctgtgccg agaatgttat gtccgagagg atgatgaccg gaaaggatat tctcgaattc      900
gtcgaatata agttccgagg gattggtctt cataagaaat cgattttcgt cgaataacaa      960
ccggttt                                                                967
```

(2) INFORMATION FOR SEQ ID NO:1317

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 1192 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1317

```
ccggacgctc cgaatagaga tacgtgcagg cggctgaaag aaatcttgtc tgcaggaagc     60
tgtagcaatc ctcgaagaat tccggtttct cacctctctt cctacaatga catctatccc    120
gatgaaggcg tggggcaatg ccctgcgata tgctccactc gctcccgaaa gagagccgta    180
tcgtaccgac ggcgcagagc ttgagcacat cgtcggatcc gctctgaagc ggcatatgga    240
aatgtgagca atacggtgtg ccgaggcaca gaagtcaata agttcgtcgg agagagattt    300
ggttcgatag aaccgattcg gtatcgctcg ataccttcca cttgtccaga gcacgcaaga    360
gatcgaggaa tgtctccccc gtactgcgcc cgagtcacct atattgactc ccgtaagtac    420
gatctccttt cctccctctg cgctacggcc tcagcctgtc ggacgagaga ctctatcgac    480
ccgtttcggc gcgtccgcga gctttgggta tcgtgcagta agagcagtgg tagtcgcatc    540
gtcctgcact ttgaggaaat ggcgtgtgcg gtcgtccgcc gaacagccgg ttgaaatttg    600
cgaatatcct ttgtgggggt cgtgagaata gtctgctggc aaagccctgt atcggtcttt    660
ggctgagaat acttacgagg tcgagctctc atcggctccc agtacgatgt ctactccgtc    720
tattcgagct atttctccgg tttgagctgg gcatagcagc cggtgacgat catcaacgca    780
ccggatgctc tttatgtaac ttgcggatgg cattgcggca tttcttatcg gccgctccgt    840
tacggagcat gtattgatca cgcatatatc ggccttttcg cctctcgcac agggcgcaca    900
ccctgctcgg cgagagcttt ccgatggtc gagtctctgc gaaattcagt ttgcagccaa     960
gagtcaggaa agccgctttt tgttttcaaa gatgaaagca tctgtcatac cgcgcaaatt   1020
tactgctttt gagactgtgg gacagatatt tcagggcaac tcacagggca atcgcattga   1080
actgtcaaca cacttataaa cctaactaac gattgctaca ctcggtttca aacaagtacg   1140
aattaatggg acctttgcac aacaagcagg cncctttggt tattcttctt at          1192
```

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1318

```
gagatcgacc gtaagcccac tataagtaat caccccgata gcaggtcgga agcatagtag     60
cggctatct gctcttgtcg ccgttctgcg gagaagaggt gcgcttctgt tcattgatgc     120
cgatagcgat gatcacctca tcgaataggc cagcgagcgt tcgacgatgt cggcgtggcc    180
```

```
gcgtgtgaaa gggtcgacga accggcaaag agggcgatat tctttttcat atttgattct    240
tgagaatcgg gaggatcgct taaagcacat cctcatccac gactaagttg tcaagataaa    300
ctcctgacgc tcgctcgtat tctttcccat atagaaagtg agcgttcctt gatcttatcc    360
tcgcgcttga ggctgaccgg ctcgagacgg atttctcctc gtcgatcaaa tccttgaatt    420
gctccggaga gatttctccc atcctttgaa gcgcgtgaca tcggctttct tgcccagctg    480
cttcagcgcg cttgcttctc ggcctcacta tagcagtata tatccgtcac cggcttagga    540
tatcggactc ctgtttcttg cgtccgcgtt tgggggtggc tccgaaggtt gttttttgga    600
ttcgggcgga aggaaaacgc ggaagagtgg cgtttcggga catagacatg ccccttgcgc    660
acaaggtcag ggaagaactg aagaaaaaag tgatgatcag caagcgaata tgcataccat    720
catcatcggc atcagggcaa tgatcacacg attgtagcgc aggccgtcca acccttcctc    780
gatatcagag ctgcctgcaa gaggttgaac tcctcgttct catagactac cttttggtca    840
ggccgaaaca gttgagcggc ttaccacgca ggctgaacac ggctgatagt tggcatcccg    900
acacgtagta atagagccgc tggccgaatt acctcggtga tgaaaatgct ggtacgctcc    960
ggttccttcg ccttgggatc ttgaggtgga cggtgcagtc acgcagtttt ttgttgtgca   1020
gattggattc ttagctcgtt cgcgtgccaa tttggtgatg ccgctcattg ctttgcgccg   1080
cgttcgctct gctggatctt gcgcagcatc tcctccgccg tttcggttgg atatgcagat   1140
agtcgtccag ttctttcttc aggaagtcgc ccacgatttt tgtatcgtag gcccatccgg   1200
ccccatgtca cggctaccga gtttgtcttg gtctgactct cgaagacagg ctcttccact   1260
ttgatactga tagcgcggcc atgccgctac gaatgtcgct gtattcgaaa ttcttggagt   1320
agactctttg atcgtacggg ctacggcctc acggaaagca ctcagatgcg tcccccttgt   1380
gtcgtattct gaccgttcac aaagctgtag aactcatcgc ctactgctgc gtatgggtga   1440
cgacgatctc aatatccgta tcgctcaggt aatgatcgga tacagtgcat cgcccgtcat   1500
attctcagcc aaaaggtctc caaacctttg cgactgagga atttcttccc gttgtagaag   1560
aatgacaacc cgtattcagg aaagtatagt tcttgatcat cgaaacgacg aactcctctg   1620
ataccgatag ttgcggaaga gactgtcgtc gggcgtaaac cgcactcagt accggaaggc   1680
tcaccggaag ggacaggatc ggtctcctcc aagagtcggc acgactgtac cgtacgcgtt   1740
tggtttgtcc atcgcgccat accgaacgac aaattcggtg gagagagcat tgacagcttt   1800
gatgccgaca ccgtcagtcc gacggatttc ttgaaagctt ggaatcgat tttgc         1855
```

(2) INFORMATION FOR SEQ ID NO:1319

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 3755 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...3755

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1319

```
ggcgcccatt tagtcacgag cagtagacgc gaaaccaagt gatctaccct ggtcaggttg     60
aaggttaggt aacactaact ggaggaccga atcggtaacg ttgaaaagct ttcgaatgaa    120
ctgagggtag gggtgaaagg ctaatcaact tggagatagc tcgtactccc cgaaatgcat    180
ttaggtgcag cctgttgatg ttatcatgag gtagagcgac tgattggatg cgagggtttc    240
accgctatca agtccagata aactccgaat gcatgataat tgaccgatgg agtggggcat    300
gggtgctaag gtccatgtcc gagaggagaa gaatccggac cacggctaag gtcccgaaat    360
aattgctaag ttgtaaaaac gaagtcaaga tgagagacag ctaggatgtt ggcttggaag    420
cagccattca tttaaagagt ggtaacagct cactagtcga ggattttggc atggataata    480
cacgggcata gcaatttacc gaagccgtgg gatatagtaa tatatcggta ggggagcatc    540
```

```
cagcgacgta gaagggaaaa gggcgacttt ttctggagtt tctggaaagc aaatgtaggt    600
ataagtaacg ataaaggggg cgagaacccc cctcgccaaa gaccaaggtt tcctgatcaa    660
cgctaatcgg atcagggtta gtcgggccta aggataagcc gaatggcgat tccgatggaa    720
gaaccggtta atattcggta ctgatacaga gagcgatgtg gtgacggaga agtgacagtc    780
cggcgtctga cggaataggc ggttaaaggg tgtagatgtt gatcggggta ggcaatccgc    840
cctgagagtc gaacctgaca gtacccggag tacaagtacg aaggataagg acgtaaaccg    900
gctcccaaga aaacccgcta agcatatttc ttgttacccg taccgtaaac cgacacaggt    960
ggttgggttg agtatactaa gcgctcgaga gattcgcggt taaggaacta ggcaaaatgg   1020
tcctgtaact cgggagaaag gacgcctgtc tccggacagg ccgcagaaac caggcccagc   1080
gactgtttaa caaaaacaca aggctatgca aaaaagcaat ttgaggttat agtctgacac   1140
ctgcccggtg ctggaaggtt aagaggagga gtcatctcaa gagaagctct gaattgaagc   1200
cccagtaaac ggcggccgta actatacggt cctaaggtag cgaaattcct tgtcgggtaa   1260
gttccgacct gcacaatggt gtaacgatct gggcactgtc tcaaccgcga tctcggtgaa   1320
atttagtatc ggtgaagatg ccgattaccc gcaacgggac gaaaagaccc cggaaccttt   1380
actatagctt tacattgtat ttgggcatca gatgtgtagg aaggccggag gcagagaagc   1440
gggtacgcca gtattcgtgg agtcgatgtt aaatacggcc cttttgatgt ttggatacta   1500
actcgcggcg tgcgaggacg tgtatggtgg gtagtttgac tggggtggtc gcctccaaaa   1560
gcgtaacgag gcttctaaag gtaccctcag gccgattggt aaccggtcgc agagtgtatg   1620
gcacaagggt gcttgactgg gagacaaaca agtcgcacag gtaggaacta gagcatagtg   1680
atccggtggt tccgcatgga agggccatcg ctcaaggata aaaggtactc cggggataac   1740
aggctgatca ctcccaagag ctcaatcgac ggagtggttt ggcacctcga tgtcggctcg   1800
tcacatcctg gggtggagaa ggtcccaagg gttgggctgt tcgcccatta aagtggcacg   1860
cggctgggtt cagaacgtcg tgagacagtt cggtctctat ctgttgtggg ccaggaaatt   1920
tgcgagggtc tgacactagt acgagaggac cgtgttggac gacccctggt ttaccggttg   1980
taccgccagg tgcaccgcgg gtatccacgc tggtaaggat aagtgctgaa agcatctaag   2040
cacgaagccg gcctcaagta agatttccat aaatagggtg gttaaagact atgaccttga   2100
taggctgagg tgtatgattg gtaacaatta agccgagcag tactaatagc ccgaactttg   2160
tgcatcccga aggatgcggt ataggttggt ttgttccgc aaagctgagg aattatttgt   2220
tggcctttcg atatgtcgat tgccttttcg aagtttcagg tggttataac gttggggatc   2280
cacctcttcc cattccgaac agaaagttaa gcccaacggt gccgatggta ctgcgtcaca   2340
gtgggagagt agacgccgcc gttttttaag aagcgtgaga gagagggggg gataggatct   2400
caccctcctc cccggaaaaa aaggtgaagg agagagtctc gaatccgagg tctctccttt   2460
tttattttct ctctctccaa aaatcatttt gcttttctcc tattcctctt tctccttttc   2520
cttccttcct ttcctccccc ttgctgcggt tattcctcta acagatcgta cgccaactat   2580
ctcattgttc ggtaggtcca taggtagccg cggacggatg gatagcccat cgagacgagc   2640
agccggtata attctccatc tgtgcatgat gaactttgcg aactgctccg aattttagtc   2700
tacgatgtct gtgtgatcgt cgtagagaat gatccgatcg ggacacgctg ttccccttcc   2760
gggaggagaa tatcctgttc attaagaact cgtcgctacc atcgaaccaa cgagacaatc   2820
gactgtccga agtgacaaca gaaggcgatc gaccaattcg atcgcctcat ctctcgtgac   2880
gattcctccc gcacataacg ctcaagagca ggctcgatgt ccttggcgag aacgatgtcg   2940
caaggattct gtgcattaca tgtccgtggt aaagcggttt gtgcctgcgt aaaattcact   3000
gccttcaggc cggatagcca agcggtcggc tacggccgga gacttccttt gggcagggta   3060
aaaggtaagc cagaagaggg gtgatcttcg ttttttgtct cgcggatatg accggacttc   3120
cccagcagta catatcgact ctgtcttatt ctcgtccaag gaagcaagag ctaaatgtat   3180
aagattccca cggtagagag cgattcgggc ttttgggaag gatgtaacca cagagcatct   3240
cgtccttcgc tcgtgtcgta gccacataaa gaagattgag gtttcaagga gaatatcggc   3300
tctttctcgg aaataatctg tggcaaacat tgttgtgcca tctccttctt atatctgatc   3360
ggcactacgg gcaggatatt gaaggactgc gggcaggatc gatcttgcac cagaggatgt   3420
gtcgatgtgc gcttcgtcgt ccagattcca gtccaagaaa ggaataagaa caacgcggag   3480
cctagacctt tcgccttgtg aatggtcatt agcgtgacgg cctgactgtg ggagcggagg   3540
aaatacggct tttggcatgc cccgtttcgt cccaccatgc aggaaagagt gcagatcggc   3600
agatcgttcg tgaccgaaat cattgataaa tccagccaag caattagata gggcatctct   3660
ctttcaggta ggtataatgg aaaaaagaga ccaatccttc tgccaattcg tataaggagc   3720
gacgcgaagg ttggcaaatt ctgcaagctc tgcgg                               3755
```

(2) INFORMATION FOR SEQ ID NO:1320

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 295 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double

(D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...295

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1320

```
cggcgaatct tcatcttcac taagtgggtc tacctgatct tcaggagcag taccagttcc       60
tgatgagtag gaatggcttg tttacgaatc ggacaattgg attctcgggg tctatcaaac      120
tcaaataata aggtgtgata gccattcgag tactttgagc gattctttta ctccctcttc      180
ttcttcagcg gtgagttaac gtactttttc agctggtcga gcgtctcaat tcgattgagg      240
acctgcaatg ccagtcgttc cattgctcat cggtgaacat cagggaaata atact          295
```


(2) INFORMATION FOR SEQ ID NO:1321

        (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 1353 base pairs
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: double
                (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1353

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1321

```
tcggcatttt cggttcgaaa atccaagttt ccaaccaanc cacagacttg atcgctcccc       60
tttgcatagc aaatctgtga ctgccggttc atccggaaca ggaaactttt ttcttgttat      120
cgttcaagaa cgnaaagtct gtgccgacga ttggcacaag tccttcccgg cctgttagag      180
attgaggact gtcagcaatc ggactttcgc atcggtcatt atgacagacg aggaagtatt      240
gaacaccgcc aaacggtcat tgttatgctt aaagggataa atccgaatcg tgcgcacgat      300
aattgcaata cgtagttaga gatggcatac gactttacac aaaattccgc aacagcctgg      360
agtacagcta tcaggaagca acccgtctcg gctcgtagcc gtgacgcaag atatgctcgt      420
actcggtatc attcgcgacg ggacaatggc gcgatcgaca tcatgcggca ctatgggatc      480
aacttgtacg actcaaacgg ttgatcgagt tggaagccat cgccgagagt ttgcctgctc      540
gcctgaggga tcgcccatct tcaccccttc ggctcgggag gctatcgaga tgccacagac      600
atctgtgccg acatggagga cgaggccgtc agcccggcca tctgttgctg agtatcctca      660
actcgacaca ggagagctta gtacaaagat atttatgaaa caaggtataa aatacgacac      720
catcctgtcg gattattcgg acagcgcaac ccctccgaag ggaagtctcc ctccgaaatg      780
gagacctcga cgggtaccaa gacaacgact tcgacgacga agaggacgaa tccctccgcc      840
ttccgggaat agcgggacag gcggaggctc cggcgacgcc ccgaacagaa taccggcgga      900
```

```
ggcgatacta ccaccacgac acggagtgga gcgacacgcc tgcactggac accttcggca      960
ccgacatcac tgccatggcg cagcaggcaa gctcgacccg gtagtgggtc gggagcagga     1020
gatcgaaagg tgatacagat actcagccgg cgcaaaaaga acaatccggt gctcatcgcg     1080
aacccggtgt atggcaagag tgccatcgtg gaaggactgg ccgaacgatc gtgaacagga     1140
aggtgagccg tattcttttc gacaagcgga tcatcacctc gattttggct cagatggtag     1200
ccggcaccaa atatcgcgga cagttgaaga gcggttgaaa gccgtgctcg atgagctgaa     1260
gaagaatccg cagacatnct cttcatcgac gagatacata ccatcgtggg gaagcaggct     1320
ctgagccgga tcgatggata ccgtcaatat gct                                  1353
```

(2) INFORMATION FOR SEQ ID NO:1322

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 625 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...625

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1322

```
tcagctggca gctcaccctt ttcgtcttca tcctcctacc gatagccggg ggctgatggg      60
taaggtgggc aaaactctca agcgcaagag tctggaaggc agaatcagtg gggaagcctg     120
atgagccaga tagaagaaac gcttggcgcc tgcgtatcat caaggcattc aatgccgaga     180
aaaagatgca ggatcgttcc atcgtgccaa cgagcagttt cgccgtacga cgatgaaggt     240
cttccccgcc agcagttggc acatccgatg agcgaatttc tcggcacagc tacctagcca     300
tcgtactgtg gtatgggggt acccttatcc tgaacaatac gaggagatcg atgcttccac     360
ctttatatat tatctggtga tcttctacag tcgatcaatc cggtcaagga gctgagcaag     420
gcatcctacg ccattgaaaa gggttggcct ccatgtcgcg cgtggacaag atcctgatgg     480
ccgagaacga atcaaagatc ccgaacagcc ccaccccgtg gtgttcgaag aggaggtcgt     540
tacgaccatg tgtggttccg ctacggcgaa gactgggtgc tgcgcgattc tgtctgacaa     600
tcccgaaggc aagacggtgg cattg                                           625
```

(2) INFORMATION FOR SEQ ID NO:1323

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 1221 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1323

```
aatgactgtg ctacgggcgt cagacggtct ttctaacaga ttctactatt tccgcaagct     60
gctggttatc tcgtttgttg ttgctgcggt aggccaacgc tgggctttgc catcggagcg    120
atatggcttt tctgtggtat ttcctattgt atgctattgc tcaaaagaaa ttctatctgc    180
cggtaggtat tcttgtctat tggtagctta ctatctgttt cagatgacgg ggcttatcgg    240
agctgagaga ctaaagacgc tctgccataca cttaagcagc gacttccctt attgctttgc    300
cgttagcttt gtgctgttgg cgtccgacaa gaacggaatg ggggtatttc tttcttttc     360
tttccgcctt gtattggtgt acttatcctg cacattgttg tctctttgct tctgaatcag    420
tactatggcc aatccatttt gctccgtttt cttttgataa attctatctg aagactcata    480
ttccgacatt gcatcgagtt tctgtatgct ccattggacg cattttgccc atcccacttt    540
atcttcttgg gcatattcgc tatttttatg gcagtcgccg tacgtcagat ttctatcggg    600
agcaaacggt atctacggtg gaaatgatct atggtttgtt gccttgtcat gctttgcttt    660
tattacccaa agccgcttgg ccatgccttc attcccctgt ccatcatgtt ctttttttg     720
gtgcgagcct ttttctatct cagaagaaaa aacttttgtt cacctctttc atgcttatca    780
tcgtggcggt tttatcttca acggcctctt gtctcatcgt tttttgcgg  acgagagcgc    840
atgcagatgc gtgatatagc catggatgcc atcaatcggc atcatggaca ggtattcggt    900
taggcactat ggacaatata ttgcaggcgc aatcgatacg gatattttgt tgaagcatcc    960
gcacaaccag cttctggccg tggtatgcag cttggtattc ccgggatggt tgttttggtt   1020
gtattcgtag cggtttgttt tattttgcct atcgcgatcg ccgatatgat ttcctccttt   1080
cctacctgct atcctcctga caatggcagt cgaatcccct ctgatctcgt tcgaggtgcc   1140
tatttgttgg catttggtt ctcggtattt gccgttctcc gactcgaaag aaagactttg    1200
                                                                    1221
cttgaaagaa tttttaagt t
```

(2) INFORMATION FOR SEQ ID NO:1324

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 655 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...655

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1324

```
tcatctcccg aaggatagac gtagctgatc atcacatgca gcgatggcga tctatgtctg     60
cccgcagagg gatgtagcgt tcgagatagg ccgaatcgaa gagacagact tcgattcggc    120
agctttgtta ttgctacagc ccaaagcgtg atcaaagaca atggaaagag tagcaacagc    180
acgctgcgca tggattcatc atagtgaaag attgtaatcc cgatagattc attttactgc    240
cacaatttac gcaattcatt cggataagcc ttttttttac gcgccggtgc acatctacga    300
gcctgttcga agttattaga gtatcgaaaa ttgcttgcat tttatttgaa tctagtacgt    360
aaaaacaact ctgctcagaa tcttaacata ttccatgcaa aagagggcct ctgtgaagaa    420
atgcttcttt aaggctgttt taatattgag caccttaaga tgttactcga attctgatga    480
ggtggatctc tcaaacggtc aaatctgttc atgtggcgga tgaactatta tctttggcag    540
```

```
acggagccgg tctttccatc atcgaatgag gtgagctcgg catttccctt gtggtaaagt      600
cttaatcaaa gacttattgg ggtcgatatg cagagagaaa agatagcctt atcgt          655
```

(2) INFORMATION FOR SEQ ID NO:1325

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 1064 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...1064

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1325

```
tgtgtgccgc atcggtatgc cngtatttga tagcacgctt ataggaggag ggaaaaaaag      60
tgcactaccc tctcctccga gttgctccaa atcggagaga gatagccggc ttcttccata     120
tccgaagcaa tgcaaaggac agggcgacgg attcgtgcag cagtttcact ataagagctg     180
ccgacgaccc gcaaagccgt cgagagctac gcacttctct cggtcgaggg ctttcatcaa     240
agcctcacac cattgtgccg gcgaaagagg gaaagaatat cgattggttg gggaatttga     300
tcatgagaca aaaataagcg gtctgtacca attattttag cgaacgatat tacgatccat     360
cctaaagttc cggccaaatc agattgcacg ggtggtttat gcgcaagatt tttctcttt      420
gtccttcttg aaaacgtgac ggcaccgaaa aagttgatgc tcggaatcgg tcaaatgttt     480
cgacataatt acatcagcac gatagtccat ttagagccgg tgccatagag tggagcagtt     540
ttgtagttaa tacagtgtac atttgtgtcg ataaaaggcg aacaaccctt tcgaccgcat     600
caacatgctg ataatgaata aaataaaaaa gtgaaagaat ataatgaaca agcaaaaaaa     660
caatcgcgaa cgaacgcctc agcccgacag gataccgaaa gagacgaaca actgacaaac     720
agtcacgaaa atgattagat agtgcccccg cagccgaaga gaacgacaag gtggcagacc     780
cggtgagcag ctcacggctc agttggctgc tcttaacgac acccactgcg tttatggcag     840
aatatgacaa ctaccgcaag cggacactca aggaaagag cgacttatcc gcaatggagg     900
agaaaaggtg ctcgtgggat ctgctgcccg tatcgacgac ttcgagcgcg ccctcagcaa     960
tctgggcgac atgtcggagc tgctgccatc aagaaggagt ggaactgatc tacngcaagt    1020
tcatggactt ctgcagagca tggtgtcaaa aagatagaac cgca                     1064
```

(2) INFORMATION FOR SEQ ID NO:1326

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 631 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...631

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1326

ggccgatcct gtccggcaga tcaataatca tctggccatc ggtttcttct tctgctcaat   60
atattcctcg gtatcgtcgg caccttctgg gtgcgaacga gcagcgacgc gccgaagtag   120
gaatccgccg tgtagtggga tccacgacag gagcgtattc tcgctcatgt tcggcgaggg   180
gattatactg atgacatggc tttcctgcct gcggccgtag cccgcatggt acgtcatgtt   240
ccatacgatc tttgcgacat caaggtgttt cctctcggcc ggggacgtct tttgtcggat   300
tggggtgtac ttatttgcag atgctgctga tggtttttct cggactttca ttcccgtact   360
gcgtgctttg cgtgtgcctc cgaccgaagc taccgcagcg agtagaggta gatgggatcc   420
attcccccac gttctcccta tccttattat atatagcagc tacgaaacgg ccgtatcgta   480
gtacaaccga ccgtccggtc tcgaagggca ggagccgaaa caggactcct gcccctttgc   540
gtcaggcctt tgtttgcagt ttgcaaaccg gaaaagagac aaaaccttgt tcataatagg   600
agatttgatt cggnttccta ccttgggggc c   631

(2) INFORMATION FOR SEQ ID NO:1327

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 3385 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...3385

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1327

ggacgcgatt gtcaactgat tcttgcttcc tgcacgatgc aggacgcgat gtcagctgat   60
tcttgcttcc tgcacgatgc aggacgcgat tgtcggctat tcttgcttcc tgcacgatgc   120
aggacgcgat tgtcaactga ttcttgctcc tgcacgatgc aggacgcgat tgtcaactga   180
ttctgctccc atcaatcgct aactatcagc tatttgcaac tatttatag ggctttcatt   240
gaagtttttg ccgcagagct gattcttaag tgttttttcag attacttgag gttccagaga   300
tcgcatgaag cagtcctctc ttcgtcaaat caatgcttgt gtcgccttga tcgatatgag   360
gaggtggaag ggttattgtg caaaggtctc ttaattagat acgatgttat tcccgataaa   420
gttgctatac ctgagaccat cctgaatcca tcgcagcgat gcacttgata ccggaatagg   480
caaaacaaat ccggcaaaat aggtattata ctacagactg caaagggata tatatttgcg   540
ctgtaacttt ttttttcgac agaaccaatt ataaagagat cggagcgcag atggtaagaa   600
atccggaaga agtactcgaa cagacctaca gcatggcgca agcaaatatg ccaagacatg   660
gtatcagata ttttggttgg gcatcaggcc ggagcataca ttgctatcgg aggctttttg   720
tccctgttgg tcggtaaggt tttcccgaga tggccgaagc caatccgggg ttggccaaac   780
tgctagtggg gcgatgttcc ccgtcggctt gattcttgtg gtgctcaccg gagcgagtta   840
ttcaccagca ataatgccgt actgattcct gccgctatca aagtcgcatt ccgcgtctct   900
tcccactcaa gctctggatg gtggtctatg tgccaacttt atcggtgctt tccttttttac   960
ctatttcctt gtccatttgg cggcttcgcc gatgcggatc cttggcatag tgccatcgtc   1020
catctgtcga agacaaaacc tccctgcctt ttcacgtagc atttcttagg ggaatcgggc   1080

```
caactggttg ggtttgtctg gccgtctggc tgggactttc ggctcatact ttacgggcaa    1140
aatgttcggt atctggtggc cggtgatggc attcgtgcta tgggattcga acactccatt    1200
gccaatatgt tctatattcc actcgcatac tgcaaggggc ctccgtcagc tggggcagct    1260
tcgtgatcga caattgctgc ccgtcaccat cggaaatatc gtcggcggtg cactctttgt    1320
cggttcttcc acgtccatat attcgataga ggaggaaagt agaaaaaagg cttgctccaa    1380
gtggcatatc agacaccatc ttgcctgatg tttcaagaga gattggctga aaaaaagctg    1440
acggcttacc ggagctattc tccaccgata gaaaacgaat cgctccggac tcatcgatca    1500
gcaggagttc taattcggcg atggtaccga tgggcggcaa gtttcccaag atcgttcggc    1560
aatctttcta gcagtcgatc gctgtcctcc gcactcggca tagtccatag ctcacgacca    1620
aattcaggct gtctattatg gcatggatgt cttccgaaca acctgctgac gagccagttc    1680
gtgcaggaaa tcccgattca tcactacctt tttacgtgcg tatccagata gccttcggcg    1740
agtttcactg ctttgccgag catgttccta ccgttaccga acggacagaa gggaaggaag    1800
ctacacaact gaggattcgc cgacgaaatt gccatactgc acaaaggcct gtggaatgag    1860
tgcggatagg ctccttttac ataacgctca ctcttggctc ccgaattgag gcgatatgat    1920
tggctcccaa ggcggtggca atcccactt gcttacggat gcaccaacga acgcttcggc     1980
cgaaaaaggt ttcacgactc ccgatgttcg ataatagaga tgccgtcccg tatgccgagt    2040
cggggattga atgtctggta gcagcctctc ggccttcggg tacgctaatc gtaatatcca    2100
cacctcctgc gcatagagtc ggcgtacctc tgctgtcatc attcgtcgag gtacgagttg    2160
atagccggac ctccgacctc cagaccgagg ccggggagcg tcactccccc accccttcac    2220
cctgcaggaa gcggacttcc tcatgttcgg gattagcctg atcgtagcgc ataccgccat    2280
gccattggtc acatccggat catacctgca tctttcagga ctgcggatac gacagcatct    2340
tcttcctctc gatttccgct atgggcagac tgactatttc gcccgaaggc aattctacgg    2400
ggcttcggcg agagagccaa gccccatcaa tcggtacatg gctgctacta tgcagcggta    2460
gctgtggtgc cggtagtgaa tccgcttcgg agtgaaaaga tcccggcacg aggcgttcta    2520
ccgcccgtct caaaccgaca ggcccgccac gggaatgaat gaaggaggca aaggggggac    2580
gtacgacggc atatatagga tgcccatccg tcgggcagct tctatctttt ctcggaagta    2640
accgcttctc cgctttcttt tgtgataatg gcatcggggc gaacggcttg catcactcct    2700
cgtccgcatg cggttcgaag aaaacgatgc gctccgcagg aaagcgttct tctctgccaa    2760
agcaaccgat tcgtctcgct tcaatatgcg gcaaaggtgg tgcgctcttt ccagaaagca    2820
gccagcttgg ggatcgtatt catcctgtga gcatcagcag acgctgcacg ccatcgccaa    2880
gcatccgctc gcagccgtat cgtagtttgc acaccagacg ataccttctt cgcgtggagg    2940
tattgtctct cgtatcttac tacggggata cctgtttgtt cagaggcttt gccactgaag    3000
cgtgcaattc ttcggcgaaa ggatgagcgg cgtccacgtc agtcggatct cttctttccg    3060
acaaaacgaa accatgtcgg caaccgtatg gctcctgtca gacgatggcc gtggctactc    3120
tggatctctt gcagatgcct ttggtggagt agaaaaacgg acttcccgct tcatccagca    3180
cgcgactgcg gcacggcctt ccgtagtacc gccgaagagt aggatcatgt gcggagaggt    3240
gtttgaattc gtcggcatac aaccgtgaca gcccttcccg atttctatgg cttctcccac    3300
gactatcatc gttgtcaggg tcaggttgtt ccttttacga tttctgccaa atgccggagc    3360
gtacctcgga agattttttc accgg                                          3385
```

(2) INFORMATION FOR SEQ ID NO:1328

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 614 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...614

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1328

```
agcttgcgac tgatattgag agccaagcgt atcaagcagc ttattcagat atcctttttg    60
attgctttga ccggatccgc ttgaaatcga agtacagaga aagtaaggag ccgttatggc   120
cacgggctct cccgtctgta gcgtataatt gccgcgaata ggtgccagat ccaccggttc   180
ggggcgatga agagttctcc gatggtacgc cacttgtccc cttcaacaaa aattgtcttc   240
agaatttacc gaataccacg agcaagaata caatcatcaa cgctcccacg atgcgtagcg   300
gcgtacggcc ttgatggtca ccggattgtt tgtctcttcc tgttcatatc ggtgttttat   360
ttcttgcgcc gatcagtatc gacaggacgg taagaatgta tggcggagtc tgcgagagtg   420
tcagctcgag gtttttgcgat tgatggcttt ctctacattc agtttctgac tcatagcagt   480
aacttcagaa ctttgaacag ggcacgatag cgataatctt tcacttgttc ctccagacgc   540
ctatttcgcg cacctgctcg atggcttggt agccgttcca aatgttaaga cggacatcac   600
gacgatgacc agtc                                                     614
```


(2) INFORMATION FOR SEQ ID NO:1329

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1408 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1408

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1329

```
tgcaggggat gccttatgat gcaggtctgt ttaccggatt tatctttatc tcggtattac     60
gatggtggca nctccgggag tgccgggtgg agccatcagg cggctttagg tgttttgcag    120
agtatgctcg gtttcgatga gtccttaagg cactcatgat agcattgtat ataaccatgg    180
acaacttcgg tacggctgta atgtcacagg cgacggtgct atctcgctga tcgtggacaa    240
actcagatgc gcaagaggca ggcagtcgca aggtagacaa gaggttagga agaaaagaaa    300
ggagaggaga ctgtcggcat gtacagatct cctctccttt gttatttgtt ggaggcttta    360
cgtccacagg atggcgcagt atatgtctgc ccttttcagc cgcggatcat ggtgaggagc    420
atcttgaagc gtttcgtagc aggagtgcat ggctgacgtt ggccggcatg atgacggacc    480
ggccggcttt aggagaagag gttggcctcc gattcttatt tccgcttccc cttccaatac    540
tgtacgaagg catcgaaagg tgctgtgtgt tcgctcaatc cctgccctgg tcgaaggaga    600
agagagtaat gttgcctact tcgttcttaa gtacttgttg ctgatgattc cgccgtcgga    660
atactctact gatgccgata tgtcgagaca gtagctttgg ggtatgtttc ttttgtcatt    720
gtttgttttc gattgttagt ctgatctcat gtcttgtaaa cgggcatggg cattacccтt    780
attggtcgga gagagcctat acgagaagag ggtgtgccaa acgaaaatac ttctggcaca    840
ctctctcttt cttgcattcg gaaagcctgt atctccctct cccagcgtaa ggaatcagcg    900
ggagaagcgg ggttcgttag aaagcatatt ccgaacgaac tccgtggctg cctgtatctg    960
tttgtacatg actacatcgt ctccaccttg ggagctacct tgcgcagctc gccgagcatc   1020
ttctccaaga cggagacgtc ttggtcggac ggcggaattc gaaggcttgg gccgcatcag   1080
gagttcgatg gcgaagatca tctccaggtt ttctatgatc ggaagcactt cgttgctgcg   1140
ttagctccca tagaaaccgt ggtcttcctg cccgttctgc tgacgatact atcgctggct   1200
gcggagaaac agtacattct tgttctgctc accatagctg cggctgcata ctggcggtat   1260
catgaatccc gctgtcagac cggggattgg ctacgaggaa ctcaggcaga ttgcgcaacc   1320
cgatatgagc tgaacctgcc nacgttcgct gatatgccca gttcagccag gcatagccga   1380
aaatcatata cgatgcaaga agttggcc                                      1408
```

(2) INFORMATION FOR SEQ ID NO:1330

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1378 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1378

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1330

```
tggggattgt agccgaactg gtattgccat aacgctcgat attgaccata ctttctcata    60
tgggactccc atacgtcggg caacggcatc gatgattcga ggttggcctg atgaggtact   120
acccaagtaa tatcatcgtg cgaaagatgt tgcgctccat gatctccaca cagctgttgc   180
acatatctac gacagctgtt tgaagactac ctgcccttcc tgatacacat aatgccaacg   240
attatcaccg tttcgtgcgt agcaggacat gccgatccac cggccttcat gatcaatgat   300
ctttgccgat gccattggag tgcagcacag catccataac gccacttctt cttcggtagc   360
ctcgagcaaa acacaaccgg cgccatcccc gatagcggac aagtggctcg atcggtataa   420
tccgtaaaag ctgtcatctt cccgtagcga tcacaaggat cttggaataa cgccccgaac   480
ggataaaatt gctcccactt caagggcata aataaacgtg ggacaggctg cctgcatatg   540
aaagaaaaga tgtcgccaca accgatttca tgagcaacga tgctggcctg gaagggaaat   600
gatagtcgct cgagttggtt gcaaggatca agccgtcata ctcttgggat cgataccatg   660
acgttcgaag aggtcttgtg ccgcacgatg gccaaatagg aagctccttt attcttgtct   720
cgaaggatcc gacgcctttg atccccacac gggtcatgat ccattcgtca ttggtatcaa   780
ccatttttcc agatcgtcat tggtaataac atcttcaggg agataggccc caaggctgtt   840
atagccgcgt ttattttatt cataatcgaa tttgttgcat aaggacgggc accggccctt   900
tttaaagacc atatcccgcc ggaaaagatt attgtggccg ctaaaataaa aaaaaagtcc   960
caaagaacag gtctaaggga tcttttgctc gttcttgccg cctaagcgac gaccggcatc  1020
gaccgaggga agcaattttt acactgccac ttcttttcg attgccaact taccgcggag  1080
tagccacaat caccacatac tgtgtgatag atgtgccatg ctccacatta ggacacttgg  1140
ccaaagtcgg cataacggct ttgtcatgag ttctcccttg gcggttctcg ttttggactg  1200
tcttcttta ggatgtgcca ttttttttat ttaaattgtt cttttttgttc caatagtttt  1260
ccaagagaat cccactcgaa tcgtgagcgg tcataccgga ttcttctgtt gcttcatcgg  1320
cattatcgcc agcagatcgg acattcgatt catcatctcg gggtcgcact ctatccga    1378
```

(2) INFORMATION FOR SEQ ID NO:1331

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1000 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
     (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
     (A) NAME/KEY: misc_feature
     (B) LOCATION 1...1000

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1331

```
agaccgtttg ctttggacag atcgagttct gtcagcagat tggcaaagcg tcgaaagcag      60
tcaggccggt acaattgcta atatctataa aggtagcaca tagtcccctg cagaagaacc     120
tctaaacaag aatttggcca ttttgcctag acgatggcct ttgtttgtct gaactcaaca     180
tcacgaaact cacctgatcg agcctctccc cccgaatcgt acttgccgtt tccgttgagg     240
tctgccaaat gtcgttggca tagccatcct cggcttctat tttgattgta cactcacatc     300
ggcttcactt agctccatga taatgcgctc gccatcgacg ggtcaggaac tttctgtgct     360
gaggccgggt gaaccgatcc gaagaagccg gaaggattac aagggctgag aatagcggtt     420
ttcttttcat aactggttag ttttggtttg tgaaaaatgg ttagtatttg tactgatctc     480
atgttttcaa atctcattgc caattcggcc ggagggtttg tagctgccat tatccgaggt     540
ggaagaaaaa acgtgtcttc cattttcatt tcgtcgtagg gcaacgaaga aagcggatgg     600
atctgttttg gtttgtgcgc ctttctctgg atagcgcttt gttcgaactg cgtcaataca     660
gaggtattat ccttgcctta ggtaagcaaa tatatagagt atttcatgga tattgggacg     720
ttttctcct aaatagtcta tttataaaga gcttngggca gatcgtatgc tcgtcccaat     780
gcctgcacgg atgtaactgc tctgatttca taactttgac ttnctaaacg gtaaaaattg     840
ttttcgatgg caaataatac tcttttggcg aagactcgac gtatgtctgc cttgtcggtn     900
ttctgttggc tcatggcgat gatgcacctc ttgggcagga agtcactatg tgggggggaca     960
gccatggagt ggcgccgaac aagtgcgccg aacgctggtg                          1000
```

(2) INFORMATION FOR SEQ ID NO:1332

(i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 755 base pairs
    (B) TYPE: nucleic acid
    (C) STRANDEDNESS: double
    (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
     (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
     (A) NAME/KEY: misc_feature
     (B) LOCATION 1...755

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1332

```
gtgaatatct tcgccgtact ctttgtagta gtgggcagct atctgtctag gaaagggagc      60
ataaggcgat agcattattc aaaacatgta gagccatgga acatatatac tgtgcgtatg     120
ataatagaca taacccaaat aagcaccaag acgattcggg gaaaaaatcc catcagatcg     180
agatgtgcaa tgctgaaacg atggcagtca gccaaactgc agcatgccat ctattgcggg     240
taacaggcgc atccagcgta atacggctcc tctaaaaaac aattcttccg taatcccggt     300
attattgcaa tagcaagcaa agcccaaccc ttgcctccct gcacatctcc tttatcaggc     360
ttgtataatg ggcaccgcta cggtcgattt ctcttgccaa gccggaggga gaaagggcag     420
aaggagcttt atacctttgg tgttaatact acggccaaaa gacatccggc ataagagagt     480
aacagcagta tgctttgcgc caatcgatct gatacggttg taggcccaaa aaagatgtag     540
```

```
cctgtcagaa aataaaaagg cttgccatac agcccctccc ccgaatacac gacgctgaat        600
aagcttgtcg ccaatagcaa cggcaagcct tcctgtcgta cccgaataga gtaggggcta        660
agtgaagtac agagatcagg agatagcaat aatcagtatc agagcaagat gactgagtat        720
aggccaatct ttaaaaganc ctttttcntt gctta                                   755
```

```
gggcccactg ataaagcagg agtatggaga ctgcgaatct atttcggccc acgtttataa         60
gcctcgtgca tgttgtgtac gagctttgtc ttgtccaaac gatgaccagg tattccgaaa        120
taaaaaacat ggctcgcttc tgtatcgctg atccacccat acacatccgt tctcgcacac        180
ccctatttca ccttcgtaat agccaagtcc gtaccgttca tgtcgcccgg attctctact        240
tcatcggttt gtaggtagct atatgaatgt atggaagggc cgatccgatc cgttggcatc        300
gggatatgcg gctctgatca cttcgttaat gtcctgtccg ggcgaagctc tatggcatcg        360
ccacccactg cacgcgatat ttcgatgaag cggccacctt gtccggatag gtaatgggag        420
taaagttcat ctccggtttc gctcacgctg cttggtgtgc tgtttgattc tgtctaatat        480
gatttgtctg tgtccatgat gattacttct tgatattctt cttccaccaa ttattgaaca        540
agtagaggca aagcgaggca attcgcgccc cttgccccat gcgttcagcc gttgtacagc        600
aggaaccgag gcagactgtt ggccatggga gccatttcag agccgtattg aaacgccacg        660
gactatccat caggtatttc ataccgccga catcagcttt ttctcttggc tggcacgccc        720
caaatgatcc aaatctgacg ccaacgatag atctgctcac cgaggtcgat tttcacaggg        780
cacaattcga acaggagaga cagagcgagc aggccgatac attatcgcta tacgacgcgg        840
atccttgagc atccccagat tgatcccgat aggcccgggg ataaataagt gtaggaataa        900
ccgccggagc gacgatagac gggacacgta tcatacatgc accgcatctt atgcagttga        960
gcgttttac gtgctcctca tttcgatgat gtccgtcctt ccgttgtcca cgatgatata       1020
gtgtagctcc caccttcatg aggcttgcgg tagtgtgccg tataggtggt agagggcttc       1080
ctgtacccga acgcgccaga agtcgggtga atacccctac ggcatccagt cgggtaccaa       1140
tttctccagc ccgaaagagc aaatgttcaa tttctgcaag ccatacccat atcggcattg       1200
ccctcattgg tgcaaacgac cacttgcctg tagaggcaac ggcaaagttg ccgcccgtca       1260
ttgctgcatc cgcgtgataa agtcttcgcg caggcttttg cgtgctgcac gtgtcagata       1320
cgtgggtcgt aattgccctt ctccgtaccc aacttgtcat ggaatagatc gctacagcct       1380
cgcgtttgat atggatagcc ggcatcacga tgtggctcgg tgctcttcca taagctggag       1440
gatacgctcg ccgaggtccg tttcgatcac tttataccct tttctataag atattcgttc       1500
aggtggcact cctccgtaac atggatttgc tcttcacgaa tttttttgacg ccatgatcac       1560
gcagaatgca tacaggatct cgttgtgctc cttggcgtcc ttagcccaat ggacgataca       1620
ccgttgcgac gagcattttc ttcaaatcgc agcagcagct catccagtgt gtcacattga       1680
gcgtttgatt tcatgagcca gttggcgcag atcttcccca ctcggggcac cgtatcacgc       1740
tggatgtcgc gtttgtggcg caccttccag agcgtctcgt catgccactt gggctccgga       1800
cttattctcc aaaagcgggc agccgcttcg ctatgcttcg tactcataag tttgctgcta       1860
aatttctact gcatgaattg tcttgatcgg caatttctct ctgtctatca cccctgcata       1920
tgcatgaggc acgagctgtc cggccctgtg atgtactccg acctgtggat atgtgatcca       1980
```

```
gcaccttgtc atgccccata caggtggatc ctccggctcc tccaccgagt acataccgcc    2040
gaaaccgcag cattcgtcat tcgcttcggc tcgaatacct ctatgccctg caccatctcc    2100
aatagccgcg caccttgttg tggtacggtc ggtgcacttc actgggggtg gacagagcag    2160
ttcgcgcaca ccgtggcaac tgttgtgcag gctcacctta tgggcaatcg ggaggggagg    2220
ctggtgatct tcaggtcatc gtgcaagaac tcgctatatc ccgaaccttg gctgccgant    2280
tgcagacatg tcctgtcggt ctgggatatg atcatagttt tctttcacga aagcaacgca    2340
actgaccggg g                                                         2351
```

(2) INFORMATION FOR SEQ ID NO:1334

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 908 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...908

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1334

```
taatgtcttt tctccccagc aggatagaga ccctcacgga cgcaccggcc ctaccagcat     60
accgaaggcc atcaggaaga tcaggattgg gaaggtgaag ccaagcccga caaggcatat    120
tcgctcaccc cgttcccgat gaagatgggt ctacgatgtt gtatagcgaa ttgactgctg    180
tacccaccac cgccggagag catagtgaaa caacagtttg ggtatctttt ccgattctaa    240
tgcttgatct gttgggatga cataaattac ctctttatgc tccggatcgt tatcatccgg    300
gagtgaaaaa gccggcagca tatactgcag agcttcccct ccttacaaaa tagaccgaaa    360
accctctcgg actttcggtc ttgttcggtt gccttcctct tggacttgaa ccaaggaccc    420
tctgattaac agtcagatgc ttaaccaact gagctaagga agaatagaaa aacggcttgt    480
gacagcgctt ctcttgggct cgaaccaagg accctctgat taacagtcag atgctctaac    540
gactgagcta agaaagcctt tcgtttttcg tgatgcaaag gtagtgcata tcccaaacat    600
gcaagaggtt ccgcaaaaaa aatacattca gatattaaac cttctcgcca ccacatccgt    660
tggggcatct catccatatt catgacgaga aagggctgcc gcctccagac ggtttaggct    720
cgtgaatttt ccattcgatg ctccgaaaaa cgtggcgcga gaattttttc gtattggttc    780
cacagttttt atttcccgag ccaaacgaaa atttacgcgc gtgttttcag gattacgaac    840
catgacgtgt actgaaaaag ttgacagttg ggtggatagt tcacaatggt tactaggtct    900
tctataat                                                             908
```

(2) INFORMATION FOR SEQ ID NO:1335

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 967 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
     (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
     (A) NAME/KEY: misc_feature
     (B) LOCATION 1...967

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1335

```
ttctttgccg atgggcatct gatcggacgc aaggcttcag cttgggcgat aagttttttg      60
attgcgaacg tattcccttt gcccgaaaat agtaatttgt gccttgtttg ggtgggactt     120
gttctcattc gccaaccgga aataattgga aacaggaata atataatggt ggaaatatcc     180
gccttcggtc aattgacgac ccggcacttt caccatagca taatacaaga aaatgactga     240
tcgagagaca gaattattaa catcagcatc gaggaggaaa tgaagaccgc ctactcgact     300
attcgatgtc ggtgatcgtc tccagagctt tgcctgatgt ccggacggat tcaagccggt     360
tcatcgccgt gtgctgtatg ccatgaacga aacggcaatg tgtacaccat cccactcgca     420
aatgcgccaa tgctgtcggc gggtgctggg acactatcac ccgcatggcg actcttccgt     480
ttatatggcc tggtgcgtat ggcacagccg tggagcctgc gctatccgtt ggtggacggc     540
agggcaactt cggttcggtg gatggcgatt cgcctgctgc catgcgttta ccgagtcgcg     600
cctcagcagg attgccggtg agatgcttca ggacataata aggaaacggt agacttccag     660
aacaatttcg atgatacacg tcaggaccta cggttctgcc gacacgcatt ccgaacctcc     720
tcataaacgg ggcttcggta ttgctgtcgg tatggctacc aatatgcctc cccacaattt     780
gtccaagcta ttgacggatg tgtggcgtac atcgaagcag atggcgacat agagtggagg     840
gcttgatgca gtatgtcaag gctccggatt tccccacagg agattcatat acggctattc     900
cggagtgaag gaagccttcg agacgggacg agccgtgtcg ttatcagaag tcgtgccgag     960
atcgagc                                                             967
```

(2) INFORMATION FOR SEQ ID NO:1336

     (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 658 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...658

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1336

```
taaaggtgca tggatgatct ctatgcaccc ttcgttttga tccgatacgt cgaactcgat      60
tgtcagtcga gcgatcgagc cactgacggc taatgtgctc gagccaatta gctcccacgc     120
ctatatcggc aattagcggc acacgaattc gggcatcacg ccttccacgg caacgaagat     180
gcatacgaga agcattcgat gcgttggaag aggcaaatag cttgccaaat cgaggaaatg     240
aaaagcgttc gtagagctta aaatgatgcc gatatccttc actacataat ctgttgcatt     300
tatttgtgga atgtgcagag cgacacgatg tccgaaattt gctaaaataa tgtacctttg     360
ccgcgctgat tattatcaaa tagtgccgaa cgtttgattt tcagtgcgtt tttgtccgag     420
aggagcagcc cagtgtccgt ggtaaagctc ctgatgcacc ggccgaatcg acagaaaaga     480
tgatcgttca caaattacta acaacaaaaa aacaagcagt ggatacttta agcttcaagc     540
```

```
catttctgcg aacaaaagca actgttacga aggaatgggt cattgtagtg ctgaaggaca        600
gacacttggc cgtatgtgtg ccaaggtggc aaagctctgc gcggcaaata caagccca        658
```

(2) INFORMATION FOR SEQ ID NO:1337

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 687 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...687

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1337

```
cgtctccggc gtacatgtct ccggtgcagt acctttctct ccaaggatct ggaatagtag         60
tgccggcgag gcagttcgtt ctcttgccac caaagacgag aggcgccatg tcgtgcgtag        120
aggtggtaca taccgaacaa tagggctccg actcatatcg gcaaagtcct gtcccggctc        180
tttggatatt ctttccaaat gagggatagc agttgcaact gttccattac gacaggcact        240
gcaggggtat cattcccaga tcctctacac agacgagcat atccgtggag gaaacagcgg        300
tatcagccgc gacagtgcct cttgcttcca caggtcatcg ttcgcttgtg gaagtagtcg        360
tccgacagac gctgccaagc tttctttcc tcaagctcag atgagcatag cgaaaagact        420
tttcgaaatg gatgcgtgga tgaaggcccc gggcttgcct gattctatta cgaaacatac        480
ttctgtggct cacgcatcaa acctctgatc gtgtcctctc ctccgacaac ggctgtaggt        540
ctaacgctgc tatatcggtc tgatagaaat tcttcgtcgc cagcgtatat aatccgaatc        600
gaacggacga aggtatcgac agcatacttc gcttgcaagc gtccgaaaat ctgcttgagg        660
tcatctgcat gaacgaagcg gaaggggg        687
```

(2) INFORMATION FOR SEQ ID NO:1338

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2996 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...2996

```
ccaggcgaag tgcatggcat ctggcgtatg aaggagacca aatgatgtcg gcctttcgtg      60
gcacaggctt tcgtcgatgg agatcgggta gtagtggtga gggtttcgta tatcatccca     120
atgagaagaa acgcgatctg atgcggcgat ggaagcggca ctatacagca tgcgtccgaa     180
ggccgagaaa gagttcatcc gtccattatc aggaaagctc gctggactac actcaaataa     240
atatcgaaac ggcttaccga caacacacga agattcaatg caatggagaa taaaagctga     300
aagtggccat ttcccatggc gacatcaatg gtattgggta tgaattctgc ttaagacctt     360
tgccgaagcc tcgatactgg atctcttcac gctgtcatat acggatccgc caaggtggca     420
gcctattaca ggaagacctt gagttggatt tggaaagttg gaaccaagta tcctcggcaa     480
ccgaagcggt gagggcagag tgaatctggt aaactgcata cccgaagacg ccaaagtggg     540
atgggcgttt gctctcctca ggccggagcc tatgcgataa aagctctgac atggccatcc     600
aagccgtgaa gcaaggcgat gcggatgtgc tggtgacatg ccgatcaaca aagcagccat     660
gccgcaggac atctttccat acaaagccat acggaatacc tgcaggccca agccggcata     720
gagggcgaag atgcgtgatg atcctggcgc aggataagct ccgcacagct ttggtaacga     780
tgcagagccg atagcacgcg tgccatcgct tatcactcgg gagcaaatcc tggcaagctg     840
aaggctttcg atcgcagcct ccgcatggat ttcggtatag tagtccgcgg atagccgtca     900
tggctctgaa tccgcatgcc ggcgacagcg gctgatcggc accgaggaaa gcgacacgat     960
ccggccggcg gtgcaagagg agaagaacag ggattgttag tgttcggccc ttatgccgct    1020
gacggttttg ggggtcggat atggctctgc atttcgatgg cattctgtcc atgtatcaga    1080
tcaggggctg atccctttca agactctctg catggacaga ggggtcatgt gacggcaggg    1140
ctttccatcg tacgcacttc gccggatcat ggtacagctt cgacatcgtc ggcaagggcg    1200
aggcttcgcc cgattctttc cgcgcgccat ctatcaggcg atcgacattt atcgttcgcg    1260
ggcatcgtgg cgatggctac gcgcaatcct ctccgaaaga gttatttcga gcggggcaat    1320
gacatgagaa attgccgcaa acagaagatg agcattaatt ttaataccct atgactctat    1380
gtttaaggat aagactatcg tttacacatc cgggacattc gtatgttcca ctacaaccat    1440
ttgcgcatga tcaactatgc gcgcagtttg cagacatcct tatcgttggc gtcagcacgg    1500
acgaactggt cgcttcataa aggcgccgcc cattattcct tttatcgagc gcttgcaaat    1560
ccttgaagcc tgaagacacc ggacatcgtg attccgcagc atacattgga tcacacgaga    1620
tcgtcaagaa gctgaatata gacgctttcg tagtggggga cgactgaatg gcaaatacga    1680
ctatctgaag gatctcggcg ttcaggtctt ttattccctt acgggacggg cgtttcctct    1740
accaaaatca aggagactat acacatagct atgccaagac gctgaatgaa gagcgtcagc    1800
acaagcccaa gtcgtccaaa acatgtagga attatggcgg tcggatacgc gttgattacg    1860
ggggaaccaa ggggatcggt ctcgcagtag cccgtctctt ggcaagcaga gatactccct    1920
cgttcttacc tacggacatg atcaggagac ggcgcgagca tggcggccga attggcagag    1980
agcgctccat ccgtagagct gctgcaagcg atgctaccga tgcgaaaggt atcgacctga    2040
tagcggaagc ccttgagcga gggatattac tctgcaagct cttatcatga atgccggcat    2100
cacatgcgca cgcctttcga ggagatgact atcgacgaat ggcagcgcgt attcttgcca    2160
atgtccattt ccccaccttc ctgatccaac gccttctgcc gcgtacgagc gcaacaacgg    2220
atgtatcatc tttaccggat cgctcatggg aataaaccgc acggcatggc tctgccttat    2280
ggagtgagca aatccgctgt acagctctga cccgcaatct ggtgaagcat ctggagcctt    2340
atggcatccg aggaatgccg tggcaccggg atttgtagat acggaatggc agaagaacaa    2400
acggccgaaa tacgccgaaa tatcgagaat aaggttgctt tgcatcgctt gcgacaccgg    2460
atgaagtagc cgaagctttt ttattttgc tcgccaacgt tattgcaatg gtgaggtctt    2520
gactcttgat ggaggctaca gcttccgcga acagctcaga catgaacgaa aacgacaagg    2580
agtaccaagc ctctctcaat cactggagac ggaaaatata attgaccgga aattctaccg    2640
tccgatggtt tttactttgc caagcttctc agtcgtacaa gggtaacgcc caataggtta    2700
cgatcctgtc catctttgtc ggattaggcg gcgggctgtg cttctgcata ctccttatga    2760
tctccgttgg gctgtggccg gtattctatg tatgtagtgg ctaatatcat ggactgcatc    2820
gacggacagc tggctcgtct gacgggatca agagtgagat cgggcgtatt ctcgacggca    2880
ttgccggaga ctttggttcg cctgcatcta tatctgcttc atcattcgct tgacagcaga    2940
gtatcccgat gccttaagtt cgatgaccac cggtattcct gaattgccgc ggtctt        2996
```

(2) INFORMATION FOR SEQ ID NO:1339

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 338 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...338

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1339

```
cccaacaaga actcggtaaa aattatcggt gacaatacga ataaatactt caggcttact      60
tcgcttacga ctcgaagtaa atcgggtgga ttcacctgtc gcaccttcgt ttcggcgata     120
cgcccatacg ttctacctac cttgtgggac accggacttc gtggcttgcc acgtgcctgc     180
ctacttgcgt atgtacacgt gctgaaaggt ctgaagaaaa aaggaacttt cctgctcaat     240
tcgattgggc tccggaagat atagaacagc atctgcccaa caaggtaaag cgttttttggc    300
taagaacaac atccgattct acacgattaa cgctactg                             338
```

(2) INFORMATION FOR SEQ ID NO:1340

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 534 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...534

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1340

```
gcaacagttc atattggttt tcaaaacatt ctttcattat atttgaccat aacaaatatg      60
attatgggac agtattcaga agatttttatt ttgaccggaa aaacgaaaag gctgtatttt    120
ccttgaaagt atatagagga gacggcaggt tcttttggcc atgaattgga aaaaggggcg     180
tccccctcgg gatttttcgg tttttccata ngagtacaaa gagccggatg gcgatcgcta     240
ctatgtttga agaacaggct ttctttcctc aatcaggatg gaactgtgtg taaatggcca     300
agtcctccct tttgtctcct ttccaaatgt ttcgctgggt acatttcctn gcaatgcaga     360
tataaaacgg agctttcgtc tatgtggtaa aaccgttttt atgaactatt atgatgaatt     420
gagttatggg gaggagcagc ggtggaggta gtattgcatc gcgagaccta cccggattgt     480
gctcgatgtg cattcactcg cggattcatt tcgtgctcag cttttgtcga taga           534
```

(2) INFORMATION FOR SEQ ID NO:1341

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 877 base pairs
        (B) TYPE: nucleic acid

```
              (C)  STRANDEDNESS: double
              (D)  TOPOLOGY: circular

     (ii)  MOLECULE TYPE: DNA (genomic)

    (iii)  HYPOTHETICAL: NO

     (iv)  ANTI-SENSE: UNKNOWN

     (vi)  ORIGINAL SOURCE:
              (A)  ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix)  FEATURE:
              (A)  NAME/KEY: misc_feature
              (B)  LOCATION 1...877

     (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:1341

gccgaaagga agacctatcg gcagcggcat atcggcgata accagattgc cggacctgtg      60
acgatgtctt tctccggatg cacctttgcc ttggaaagtt gatatagaag tgaggatgat     120
cgtgattgtc gcaggtcgta taacgcctcc ttgcataaac atgatattgt cgggcatctt     180
cttggtctta ccggcatcag atagccttcg cccttgctgc gtgatcactc cgctgataat     240
cccctctccg tgcggaagtt gtaggtaaag ttcttggctt cgaacgactg ctctcatcct     300
tgaaaacagg aaaggccatc ggataaccgg ccgtatcgag gactagcgag tataaaccgt     360
actgctgtcg gtattgagat acatgaagtt tgctccaagc gactcttttg atagctcaca     420
tagctcttgc cgaaaagata gcacgattct gtccgagcaa aacgatggaa tcggcagctt     480
cgtactccac atatcttcca attcgaattc atcgtcatac acgctatctt gccgcatcgt     540
ccggtggaat cggcaggaag ggaatctcga aaagcactgt caggaatagt tttgcgagag     600
gcaccgtgtc tttcgctgta gaatcagaca gcgcagctgc cgacggtggt gcaatccgac     660
tgctccggcc ataggacgtt ccgcaggacc aaagtagcac agagcaatcc gacaaggatt     720
acgggtaata accataaagt ctggaacaga gatcggatac tctcattcgg attcattcat     780
actccaggtg agcaaaggta aaaagaagt tgtaatacac gatgaggttg tacggctgcc     840
ccggggccga cgcattaaat tggtttgcgg cttcatt                             877


  (2)  INFORMATION FOR SEQ ID NO:1342

       (i)  SEQUENCE CHARACTERISTICS:
              (A)  LENGTH: 803 base pairs
              (B)  TYPE: nucleic acid
              (C)  STRANDEDNESS: double
              (D)  TOPOLOGY: circular

     (ii)  MOLECULE TYPE: DNA (genomic)

    (iii)  HYPOTHETICAL: NO

     (iv)  ANTI-SENSE: UNKNOWN

     (vi)  ORIGINAL SOURCE:
              (A)  ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix)  FEATURE:
              (A)  NAME/KEY: misc_feature
              (B)  LOCATION 1...803

     (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:1342

tcccagtggc aaatcgtcgt ggtttgccat cttcgtcttg gcgtgctcgt tgagtgtacc      60
gaagaaaaga ttctgcagta tggcattgta ataattccct cggtggtgct attgggatcg     120
aaatccttga ggatggtctt gaggaagcaa tatcgaaaag atgctgagga accagctcct     180
tttgcttgat gaaccaacaa acataatacg cgtaattagg cggattatct tcgtttctag     240
```

```
atctttctat catcttcact tgtactagta tcattaggga aactgatatc ggcccgggag      300
atatggccca ctggtaccac tcgaagagat ccttgtagaa ctgttcgtca gtgcctcgac      360
ggagaaagca tcctcaatat ctttgagttc gagtcttggc gttgtttctt gtcgattaac      420
ttctggaagt tgtctgctgc ttacgacagt gctgcccagg gccgagcaag aaggtgaaac      480
gcttgctgct gtaatgtcgg actggctcct ccccttgtgg cagaaggtaa accgccattc      540
cacaaaggat tgtcctcgta gtggaatatc ataaaagcac tcgaatagtg tcatgatacg      600
cctgataata ttctggatgc caaccttatt gcgagcctct tgatctggct agataccgtg      660
atgtcaaaga tgttgatagg attgaatcca tatcgatatt gccgatatgc tgatctctag      720
gatgcccgtt gcttggctgc tggtcgtagg tcgggtacat ctctaggata gatcaccatg      780
accacctcaa atagctctga cca                                             803
```

(2) INFORMATION FOR SEQ ID NO:1343

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 540 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...540

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1343

```
tctttggttt ttcattttca tcaaaattat tttttgttgc atttgcataa tttcttttga      60
ttcatgcgct gcaaaggtag cagcaataag aagaaaagga ataaattcag tataaacgaa      120
ttgaagccga acaggaggaa tagacaaggc cgaatcttcg gatttctttg ctttcccgat      180
attggaagta tccgtacttc gtgctcggct gtggccgaca ggcccatgca gcgaattaag      240
aaacgttgta ggctgtttct tgctccctgc acgatgctgg aagccgttgt cacggacaat      300
cactccgtgc atgatgcagg aagccgttgt cacgtgacaa tcatccgtgc acgatgcagg      360
aagccgtcgt cacgtgacaa tcacgtcctg cagatgcagg aaacgattgt cagccgacaa      420
tcgtttcgcg cacggctgtt tgacctttcg tcgcctgaca atgcttatat aaaagctgtt      480
tcaggggggca tgtcacttga cactgctacc aataacagat taataatcaa tcaaatacac      
540
```

(2) INFORMATION FOR SEQ ID NO:1344

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 777 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...777

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1344

```
ggaaagacta ctttcacgct cggattgcta cgattgcttc gaaggcgcgt ctcaaagtgc    60
agcctttcaa atgcggtccc gactatatcg atcctaagat caccgccttg catgcggaac   120
ggaaacggtg aatctggatg ctttcatatg agtcgggagc atatcgcccg actctatgat   180
cgctacggca gtgaagcgat gtttctattg tggagggagt gatgggcttc ttcgacgggt   240
acgacgtatg acgggtagca gtgccctttt ggccgaaaat ctgcgcattc ccgtttgctt   300
ctgatccatg caggcagcac ggcctattcc gtggctccga tacgtatggc ttcaaacact   360
tccgcccggg tgtggctccg gtgggtgtcg tttcaataag gttggctccg cttcgcatta   420
tcgctatctg gaggaagcag cgcggatgcc ggtgtggcca gcctcggtta cttgccgaag   480
atgaaagatt ggaaataccg tcgcggcatt tgggcttgtc tgtggaggat ttagtccgta   540
tgattatttg ccggacaggg tggcagatgc catcgagaag tatgtggagt ggagagattg   600
cttggtctga tggcctccga tgtcgatccg gttatcgaga agagagcttt acggagtctt   660
ctttgcacgg gaggaaatgc attgcgtggc ggatgacgaa gcatttaact tcacctatcg   720
ggagaatatt cgtcgctcga aagccgggaa gggtttgttc gattcagtcc tttgcgg      777
```

(2) INFORMATION FOR SEQ ID NO:1345

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 773 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...773

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1345

```
ggaagcttcc accggtaaga atgaggctat cgagcttcgc gatcaggata ggctcgctac    60
tgtgncaaag gtgtcctcaa ggctgtgaag aacgtaaaga agtgatagat cccgcactct   120
gcggaatgtc tgtattggaa caaacagtat tgaccgcaag ctcatcgaat tggatggcac   180
caaaacgaaa agcaactcgg agcaaatgcc atgctgggcg tatcactggc cgtagccaaa   240
gcagcgcagc ttatttggat attcctctct accgatatat cggcggttcg aacactatgt   300
cctgcctgtt cctatgatga atatcatcaa cggcggttct caccggacgc tcctatcgca   360
ttccaggagt tcatgatccg ccctgtggga gctgctgctt ccgtgagggc ttgcgcatgg   420
gtgcccgaaa gttttccatg cctcaaaaag gtgcttcacg atcgtggtct gagtactgca   480
gtcggggatg aggaggtttt gctcctgccc tgaatggtac ggaagatgct atcgaatcat   540
cctcaaggct gtggaagctg ccggatacgt gcccggtaag gatattacat cgcaatggac   600
tgcgcctctt ccgagttctt caaggatggt atttacgcta cactaagttc gaaggcgaaa   660
agggcaagaa acgctctatc gatgagaggt ggcttatctg accgaactgg ttggcaagta   720
tcccatcgat ctatcaagac ggatgagcga aaatgactgg gaaggatgga aga          773
```

(2) INFORMATION FOR SEQ ID NO:1346

(i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 893 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...893

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1346

```
gcgcagtagc cgaagcatcc gattcttctg cctgcaacaa tatatacttg ccacgccatc      60
gaagctgaga gcatacctcg actgccccaa agctttgtgt ttatggtcag tagttcgtct     120
gtaccatata ggatatcctc gatcaactct tccgggcaaa tcgcgcaaag gcgttttgat     180
cgtcacatcg tacttccgca caatgcctct atttgccaaa agaaaagatt gttttttgtat    240
ttgccaatgg ctcaatgcca ccttcgtata tactcttctc acgagatgga atgacttgtc     300
catatccggc agattcactt cgcccaagcc cttacagcgc ggaaatagcc atgaggggaa     360
ttgaaactga aattgtgcgg agccggatcg cttacgaaat tcccgtatca ggacacatca     420
tcatccgact aaaatgtccc attcgttttt ttccgaatcc aacaccatca caagcccttc     480
gccttcacgc tagccagtgc caagctctcc gctatacgtt tgctttgatt cgatgctacc     540
acagcttgtc gatctgcact tcgacgtcat gcattttata gcgatcaact tcatcccatg     600
caaaatctcg cgaatctcac cattcacgcg tacgtgcgat agcctttctt acgaagcctt     660
tcgaatagct ccttataatg ccccttcgcg agcgaaccac cggggctaac aaagctatct     720
tacggccatc atactttcca aaatgaggtg gaagatttgc tcctcggtgt atttcaccat     780
cttcttcctc cggnataaga ataagcctna gcaacacgag catagagcaa acgaagaagt     840
cgtacacctc tgtaacggta ccgacagtcg atctcggatt ccattggtcg tct            893
```


(2) INFORMATION FOR SEQ ID NO:1347

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1284 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1284

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1347

```
gggaatatgt cggctttttac agtcactttta atcatccgga acgtgattgg aaactcaatt      60
tgcaagggga agaaaccccg ccggagccta atctttttga tggaggctta ctaaagcgaa     120
aaacgctcta aagcgaccta tttactgaat tacttgtcgt ttttatccct actctgaggt     180
ttatcggaca gcaatgatct agacatatac cttcggtgtt gataagtttt tgttcgtatc     240
tccaaattat ttctctcgtt tatgcgttat tggctaactt tggagcgtgg tatatacaat     300
tactacaagt gaagatttag aagagaccaa ccagcatgca ttgcctgata aagagagtgt     360
ttatcacata ccggtgatgc tcggcgagtg ttggaaggat tgcgtattga tcctgacggg     420
tgctatgtcg atgtcacgtt cgcggcggcg gacattcccg ggctatcgtg gaaaaattaa     480
gctccaaagg cggctgtacg ggttcgacca agatgccgat gcttgtcgaa acattctcca     540
gatgagcgct tcacctttgt aacttccaac ttccgctacc tcgccaactc atggattatt     600
acggagagga tggagtcgac ggcatattgg cagacctggt gtatcgtcac atcatttcga     660
cgaagaggag cgcggattca gtttccttcg gaaagtcctc ttttggacat gagaatgaac     720
gctcgtgccg ccgcatgca gctgccatct tgaacgaata cgatgcctcg tccctgtccg     780
ccctttctat cactatgggg aactgaaaca ggcacgtcgt tttgctgcat ccatgtccac     840
tacagggagt ctctttccgg cggactgcaa actgtggggc aattctcgag gccgtgcgcg     900
gtctcatctc tccgcgagaa gaaaagaaac attggcctgc atcttccaag ccttgcgcat     960
cgaggtaaac gatgagttgg agctttgcag caaatgctcg aagcagccct cggctgtctg    1020
agaagtggtg gcgacttgtg gtaatgacgt accattcgct tgaggacagg atggtcaaaa    1080
cgtccttcgc tacggaactg taaaggcacc cgatgaagat tctttgctct gtacggagca    1140
ccacagagtc cttggcaaca gatcactcgc aagccgtgac agcttcgaca aaagagctgt    1200
ccgacaaccc ccgttcaaga agtgcaaact acgaatagca gaaaaaatat aatggcagac    1260
actgcgaaaa acaaatcagc gaag                                           1284
```

(2) INFORMATION FOR SEQ ID NO:1348

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 710 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...710

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1348

```
gacggaaaag aggctgatgg agacggcaga catgacgagg acgtcaccgg gaaaaagtag      60
ttgaacagga agacgacaag gctgatgata gaggcattat cagggctacg acgacttcct     120
tggctatgag actccagagt ttggcctctt cagactattg tttgccagcc cctgtaccac     180
gatggccgaa gactggtgcc cacattgccg cctgtgccgc caatgagcgg aatgaagagg     240
gccatttggg attggcggca aagagggaat cgaatcctcc caagaggatg gagtggccaa     300
tcctcccgcc atgccgatga gaagccacgg caggcgtgct gcgtctgcat atagacctta     360
tccgatgctt ctatatcttg cgaaatacce gagcaagctg atagtcgcgc tcgtgctgtt     420
cgcgaatttc gtcgatcaca tgtcgatagt gatccggcct accaaacgac ccgatactgt     480
ccactaccgg agagccacga ggtcgtactt ctctatcttc tccgcgactt cttcgatcgg     540
tcattgtctt tgacggaaat aggctcggtc ttcatcacat acttgatctg gaagcggaag     600
ggctggtgat cagtttcttc agcggcagca ctcctttagc cgtcttcatc gtcgatgaca     660
tagacgtagt atatctcgtc cacatctctg cctgcatacg catctctcga                710
```

(2) INFORMATION FOR SEQ ID NO:1349

(i) SEQUENCE CHARACTERISTICS:
               (A) LENGTH: 340 base pairs
               (B) TYPE: nucleic acid
               (C) STRANDEDNESS: double
               (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
               (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
               (A) NAME/KEY: misc_feature
               (B) LOCATION 1...340

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1349

gatagtgcag acaaggtgac ggtggagctc gtggacaagg cgaaggtcac tatatgcctc   60
gtatgaaggt caaaactgct ctgaagggcg tccgtatgag cgtgccgagc gtgtccttga   120
tgtgccttac gcctcttcgg tcagccgata gaacaacagc ggtggatctt catcctcgga   180
caacaacgaa cacaccggct gtaaacaaag catttaatag tgacaacgat aaatatctga   240
acgtcttatt cgacaataca tccctaaaga ttcttcgttc atcgatataa cgacaaacag   300
atctccatta tgagaccttt gaaaaataat aagtggagga   340

(2) INFORMATION FOR SEQ ID NO:1350

          (i) SEQUENCE CHARACTERISTICS:
               (A) LENGTH: 681 base pairs
               (B) TYPE: nucleic acid
               (C) STRANDEDNESS: double
               (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
               (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
               (A) NAME/KEY: misc_feature
               (B) LOCATION 1...681

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1350

tatggtgcag gccggcgtgc tggaagagaa gaaaaaccgg atcatggaat aatggtgtcc   60
tccacacggc cgttcaacct gatgatgggc aaaatcatgg tatcggtctc gtaggcctta   120
cgcagctcat ctgntgggga gtgctcaggn actgctgctg acggtagcac agatcgcctt   180
cctcggcaat ctgtacgccc agaggccctg agtcggatgc aggcttccga cataacgggc   240
atggctcgtc catgaatgca gaggacttcg ccgagatgaa ggaagtgatg aacacatcgg   300
gggcatcaac ttcggagagc tgttcgtgat gtttctcatc ttctcatcgg cggctacctg   360
ctctactcct caatcttcgc cgttatcgga tcatggtatc gaacgacgaa gacaccagcc   420
agttcatgat gcctgtgatg acctcctgat gttcggcttc tatgccgcct acggcagcat   480
gaacaatccc aaggatcgct cgcattctgg tgttcgctga tcccttttcac ttcccccctg   540

```
tgatgatggt gcggttgccc tacgacgttc cgctgtggca ggagttgcaa gcatcggcct        600
gctgtacgga tgcttcgtat tgaagaggtg gatcgggcga agatttaccg cgtaggcgtg        660
ctcatgtacg gaagaaagcc a                                                   681
```

(2) INFORMATION FOR SEQ ID NO:1351

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 669 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...669

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1351

```
tcgttcctgt cttacccgat ttcaatgcag ccgatgcagc aagtatagta cgcattccga         60
tgccaagtat ctcttcgtat cggacaaaat atgggagaga tggatccgtc tcagctcctt        120
ctcctgtgcg gagccgtctc tatccgtatt atacggtctt cctggatcgt acggagggtg        180
gcttgctcag ccaggagtag aaggattgag tcgctctttc tccgaacact acccttccgg        240
cttcaggcag aggatattcg ctatgccgag gtgtcgaacg acgatctcat cctgtgaact        300
ataccttccgg tacgaccgga ttcagtaagg gggttatgct tcggccaaca atctggccgg        360
caatgtaacc tacgttaagg atagagacat tagttccgag gcgagacgat cctttgcttc        420
cttccattgg cccatactta tgctgtgcgt tcaacttcct tacgccattg actataggtg        480
tgcatgtgta atcttgggca aaatcccctc tcctctcact ctgatcaaag cctttgcagt        540
gtacgcccct catttgtcat catggtgcct ctcatcatag agaaattgat cacaaggcaa        600
tagctccgaa aatcaagaca ccgttaatca aattcctcta agacttcctg tgctgaaaaa        660
ggtgataca                                                                669
```

(2) INFORMATION FOR SEQ ID NO:1352

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 2624 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...2624

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1352

```
gtgaacgaaa cggatggttg ccgtctgatt ctggccggag atatggcacg cttccgccgg      60
tcggcagtgt ggtgagtccg gcattggatg ccggggtatg gaaacttcct acggattgcg     120
tatacatgaa tgtacactga ccgaggtgta cgtcagcaga aagaatccgc cattctctct     180
ctggccacga gcctacccgt ttactttcca atggtatttc ggaaaaaatc aagttgaaca     240
taaggattcg ggagatgtgt cggctatttc cggcactgaa ctgatagaag cactgatgct     300
tcgtttcgga ctgtaggcat ggacgagacc attattgtca gctttccaat aaacgtgctt     360
tggcctataa tctgggcatc cgcagtcagg tatgtactac gaagaagagt tgattcgggg     420
cgatcgattg gtggtgacgc gaataactat cgttattgtg acaggcgaga caagacagac     480
ttcgttgcca tggagagatc gtggagattt tgcggttggg caaacgatac gagctgtacg     540
atttagattt gccgatgcta ccatcagcct tgtggagcaa gggcgcgaat agaagcaaga     600
ttgctcctcg atggactgac agccgaaaca gccggctgac tcatgcacaa agacaaaaac     660
tgtatgatgc agttgcttga ggactaaatt ctatggcaag tatcccggcc agacgcaaag     720
cgatcaaaga ggatgtttct tttcggcctt ggaagtaaag tatgcctatg ccatcacctg     780
ccacaagcgc agggaggaca gtggaaacat gtctatgtag atatgggtat gctagctatc     840
tgcctcatga cgagcaactc tgtcgttggc tgtatacggc agtacccgag cttcggagcg     900
actctttctg gtcaatactc cgaaggatat gtcccataag aggggaaaaa gctccttaca     960
aatggaagta gagacctata tcaccaattc gttcacctgc caatacgttc ctttaccgtc    1020
cggcagcgaa cgctgtcgtc atagcgcagg tatagatata tacgggtact cagcagttgg    1080
agagcgacag gttgagggca ttttcaaatt ctgccaccgt attatcgatg tggtattggc    1140
atacaggcgc gactgccaac tcagacgact atcgaattcc atacgagttc ggcttttatg    1200
gccgaacccca attcgtgtac gatggctttc cttcgggaaa gccgtggcga gccaagtcta    1260
tatcgctctg atcgccattt gaggatgtac gagaggggag ataggaacag tcccagtttg    1320
gcgacttgcc atagacttttt ttgcttttttg tatccagtcg tacttcatac cgtaccggaa    1380
ttgaagatca tcggagcaag gaatgcagat tgcttttttag gtgtttttcag ctcgattggt    1440
aaatagctgt gtacgcattt ccgcatcgaa gagtagtacc actgcttgaa agccttatag    1500
ccgaagttgg aacgcaggcg agcaaatcct cggccactcg atagcgattg accgtgtctt    1560
tggctgcatg aagacactta gtttgttttc caactcattt ttccagcgaa tcttctttttg    1620
cgatattggc ggacgatcag attgccgaac atgatattca ggttgccgat cctcctttgt    1680
accagttttc ggaaatgtag ttctgtgaga actgcgcatt gtctccatgc tgaaaaacca    1740
gtagcggggt ttgagttcga ttcccggatt ttttccggca tgattattct gtcggataag    1800
gctcccccat cgagagctga atgtcttgtg gtttttatata ggaataatcc ggtgcgaaag    1860
gcccaattcc gtacggctat atgtgaaaag atccaatcgg cgatattgca gtcggtcagg    1920
actctgcgtg ccaattccac ttctgcaatc atgtcgctca atccggtacg ggaagaggtt    1980
ctgtccggcg gacttgttgc aaacgcgagg tatctcaggc atggtgattt gccacattcc    2040
tgctgctaac ggaccggaga attttcggct acgagcggta gttgcagata gttcatcagc    2100
aggcggcgga gactatcgga gatgtcggga ggctgtctgt gtcggctaac ggaggatttg    2160
cagttgggac agtggaagca caggcttcgt ggccatcgca ccggtgctcc cataaagcaa    2220
cagaacagga atatggagag gagatatctt atctcattgt agtcaaaaac agtttttaca    2280
taaccatttt atgccgggca aagtatacta ttctttattt tcctttttgg gggaattttc    2340
cacaacagga tagatcatat ttttacgctt tgtatcctgt tttttgaaaa agtaaacccc    2400
ggagttttta tttgactctc ggggttcgct ttcgtttatt atctgtatcg tgaagttttc    2460
tattgattgt tgaaaacctc acatgcgctg cagaggctcg aaccaaattg cggtcgccat    2520
agccgttgtc gatacgggct acgttgagca gaacttattc tcacgcangt attccagcgg    2580
ataagctgcc tttcgcggag tacggatgcg accagtcgtt agcc                     2624
```

(2) INFORMATION FOR SEQ ID NO:1353

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1299 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...1299

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1353

```
aaagaaacgt ttttatctga caccaatgat tctgatgatc acagtttgca agagagctgt      60
ttcctaagga aattagtttg ccgatatgtt ttatttggac ctttgcgctg gcaaaaagat     120
gcacctatgc atccaatgac tgcagaaaag aaaaattact taataactta acccacttaa     180
acattgtttt ctcagagaag aagcacaatt tcaccgcagg accctgtatc ctcaatgact     240
tagtttgaaa gatgctgcat cagcatgtct caattttgca ggaacgggtc tttcgttctt     300
gaagtttctc accgcgacaa agagttcgat gctgtaatgc tcgagctcgc aatctcttca     360
aagaacttct tgatgtgccc gaaggctatg aatacttttc ctcggtggtg gcgccagcct     420
ccaattctac caagtaccgc taacctgcta aagaagaaag cagcctttat caacaccggt     480
acatgggcaa caacgccatc aagcaggcca agatcatgac gcaggtatat ggtggagaat     540
agaggttttg gcttcatctg aagacaagaa cttctcatac atccccaaga tttcgttatt     600
cctgaggacg tagattattt ccacttcacg acaaacacac gatctacggt actgaaattc     660
gtaaggactt cgacacgaag actcgcttgt agcagacatg tcttccgaca ttttctctcg     720
tccgatagac gtttcaagta tgacctcatc tacggtggtg ctcagaagaa catcggtccg     780
gccgagctac tttcgtattg gtaaaaacgg atgtgctcgg acaagtagat cgtctctacc     840
cgatatgctg aactatcaga tccacatcaa gaaagactct atttcaacac tcctcccgta     900
ttccccgttt atgtagcact ccagacgatg agtggtacaa agaactcggc ggtgtgaagg     960
tgttggaaaa gatgaatctg acaaggcagc ccttatctac gatgccatcg acagcagcaa    1020
gatcttccgg gcacggttaa tcctgaagac cgctctatca tgaacgcttg cttcgtgaga    1080
aggatgagta caaagaactg gagaaagagt tcgctacgtt tgcagctcac gcggcatggt    1140
aggtatcaag ggacaccgct ctgtaggcgg tttccggctt ctctctacaa cgcattgcct    1200
atcgaaagcg tacaatcttt ggttacgtaa tgaaggaatt cgaagctaag cactaatcgt    1260
gaataaattg aaaggataag atgattgccc gatttcgct                          1299
```

(2) INFORMATION FOR SEQ ID NO:1354

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 652 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...652

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1354

```
gaaaaatgct gtaaactgaa ataaacttac catatcgttt ttttataagc agaatgcctt      60
ctgccggaaa ataacgccgg ttccctattt tgaaagacgt aatttcccgt ttcttcccca     120
cctcaaagct gttttgaaat gtattcgaaa atcctcgcta catcaaaagc atcgtaatag     180
atttgttcct cctttttcaaa tttttctctg gcatcatagt ttcaggttgt aaagattatt     240
cgttttttgtt caataattcc attgtttcgc atataactga tataactctt ggcctacggt     300
```

```
ctttgacgtc gaccgtttgc atgattcttt cgaccagttc gtttaagata aatgctcttg      360
ggcgtgaaag acttcttttg cgatttgtcc cattccgtaa gtttccgttt ttctttgtct      420
tccggagatt tctctccccg gaaacgtgca tttccttttc cctgtcccat ccgaacagca      480
tcaaaggtac tccaacgggc ttccatccct tactttaagt gcttttacga ccgacaaagc      540
ggattctcat ctttctctat ggagaggatg gccgccgact tgcgctgagt tccgaaccga      600
tatgcccacg cagtttaatc cgttcggaca aaatggatac acagataata ca             652
```

(2) INFORMATION FOR SEQ ID NO:1355

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 972 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...972

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1355

```
tgatggaaaa gtaagatttt tcatagttaa ggttttggtt aatttgggag gagtgagtcg      60
tgagactcgc tccttttatg ttctgatact cttgtctacg tctcttgtct gaatttatcg     120
ttatttttcc ctctatatga aagagttcag tactttcgcg ggcaacaaag ttaatcgatt     180
tcaacaacaa ccaattagca ataataatac gtactatggc tctaagattt atcactgcag     240
aagaacagcg gagtttgtgc atcacaacga caatgtcggc tttagcggtt ttaccctgca     300
ggcaaccccta aggtagtacc tgcggcaata gccaagcgag ctatgcagcg catgaaaaag    360
gcaatccctt caagatcggt atgttcaccg gtccagtacc ggtgctcggt tggacggtgt     420
cttggcacag gccgatgctg taagtttcgt actccatatc agtccaataa ggatctgcgc     480
aatcttatca caatggcagc acttcctatt tcgatcttca tctctctact ttggctcaga     540
tctgcgctat ggcttttacg gcaaggtgga tgtggccatc atagaggtgc agacgttacc     600
gaagacggta agatcctgcc tactacaggt gtaggtacct gcctactatt tgccgtctgg     660
cagaccgaat catcgtggag cttaacacaa gcaccccaaa gaaatcatgg gtatgcacga     720
cttgtcgaa cctctgatcc gcctgcccgt cgcgagctgc ctgtctatac tccttcggat      780
cgtacggcaa gccttatgta caggtggatc cggccaagat agtcggtgta gtggtacgag     840
cgaacctaat gacgagagcg attttgcgcc ccttgaccct gtacgcaggc tattggggac     900
aatgtggctg ctttcctcgt gagcgaaatg aagccggacg aatacccaaa gattttcttc     960
ccctgcaaag cg                                                         972
```

(2) INFORMATION FOR SEQ ID NO:1356

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 616 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...616

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1356

```
ggacaacatc gtcaatacga tcaatagtct gcgcgatacg attgctattc gttcgtcatc      60
gttattcttg tggttctgtt tttcctcgga cgatggcggc cacatttatc atcggtctga     120
cgatccctat ttcactggtt gcctccttat ctacctgatg gctacaggca atacgttgaa     180
tatcatttct ctcagcccct ctctatcgct atcggtatgg tagtgggacg atgccattgt     240
agtgccgaaa acgtaacgac acatattgaa cggggcagct atcccaagca ggctccatac     300
acggcacgaa cgaagtgggg atctccgtta tagcttccac gctacgatgc tggctgtatt     360
cctcccattg acgatgattc aggggcttac ggtatccttt tccgtcagtt gggttggatc     420
gtgagtatta tcatgattat cctacggtag ctgctctcag cctgacgccg atgctctgtt     480
cgcagttgct cagcgcgaca naaagcaagg acggctgcaa caaaagctct ttgtcccgac     540
gaacgctttc ttgattctgt agaatcgagc atatgagccg tttcctgatt gggactgtga     600
gacacagaac cggtta                                                     616
```


(2) INFORMATION FOR SEQ ID NO:1357

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1347 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1347

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1357

```
ttttggacga actcatcagc cgctaccccg aacgttattg tagagcttct cgggacgctg      60
cactttcgct ttccatcccg cccctgaaaa gagcttcacc gtggcttcac taatctcctt     120
ctaagtggta agcgcgacac aaatacctca tcacacccga atcgaacaaa agcaaaggtg     180
cctatatcgg ctgcgtacag ctgtaaaccg cgacaaggtc agtatccggc tgcgacccga     240
taatagggag ccaagccctc cctggccaat ggcgatggcc tttacctcct gcacccgacg     300
gcaacatgag cggtacgcgc atcaatgtgg ttttacccga cggagcatac aagtggacaa     360
tcctgccggc atcgtatcgg gaacaaacgt atccgcaatt acgacatccg tttcgagaaa     420
gctctctcgc aagacaactc gccgttcgcc tcattcccgt atctcttacc ttgacggatg     480
ttccggacgg ttctctctct cgatagaggc cgactgctac ccatctgcaa aggctacgaa     540
acagctgctc acgagcctgc cacacggttc gatgaagagc agatccgcag aatctgacca     600
aattaggtgg tacaccgctt gaagccgtat cagtcgaatc cggctcagtc acgactattt     660
catcccgctt tctctcattg gccggtaagg agagatgcag tccaatcctt catcgagaaa     720
gcctcctcta tgcctaacgt gaggaaaaac cggtcgtaca acgtcgcatt tctcctgcgg     780
cgagagcttg caggagggag agcagagcct ttccttctta gccaatgtgg cgacaaggaa     840
gcagaaacct tctatcggca aatgggatat acatctatcg ccccgccttc gaacactcgc     900
```

```
atccccaagg cgttccgctt atgtttтcga acactgtctc cgctatcatt tgggctattg      960
ccccacccctc caacacaagg atcgccgtac agagaaccgt actacctgat tcatggcgaa     1020
actcgtctgg actccgattc gactgccaac actgtcaaat gctggtctat cacgactcga      1080
aggaatcaag cagacctgat acgaggggaa acagagtaag gtgtgtaatc agggctgttg      1140
cattagaaat cggatgatgg tattccatgt tcatagccat ttgtatatag acgtcagttc      1200
gacgtaagaa aagaccaatg gtcattcgca aaatgccgtg caatggtctc taataagcct      1260
ctgggcgatg ttgtcttctt cttgatggca tacttgctcc gggGctgccg aggtattctt      1320
ccaaatgtga agacgctcgg aataggt                                          1347
```

(2) INFORMATION FOR SEQ ID NO:1358

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2473 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...2473

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1358

```
cagtgtgatt cagcatgcct tggtatagcc attaccacga tcatggtcaa tcactgctac       60
gcctcagccc caaagcagct ttggtgaaac ttgtagccta gagaagaaat agacgatacc      120
atcattcttc gtgcagagat gcttgtcttt ctggatcggt gatatttacg ttgttgatcg      180
taacatcaca catctcccat tcgtaagctt ttcgatctct tccattacag gcaccggctt      240
cgttgatcgg cagagaatac atgatcgcag aaaccgagag ctttcaagcg atcctactct      300
tctgtgagtg gcaaagaccg attaccttac cggttacacc ggccgttttt tggcttcgta      360
gcagcagagc ataccgctct tgccacctgc acgataataa gtaccgtatc tcccggcttc      420
accaatttgg ctgtctgagc agagcacctg ccacatcaag tgccgataga gccagctttt      480
caggcaaatc ttaggaatct tcgcatagat accgctttcg aagagaatag cctttccttg      540
atgtccactt gatctacatc cggacgaatt tccttgattt tgtcgatggg agtggcgtta      600
gagaaagcga cacgagcgtg gcaattttat cgcctacttc aagtcgattt tgtctttgag      660
agcatcgccg atcttttcaa ctacgcgaga agcatcccgc ctgagcctgt aacagggtta      720
cgatgctttc cttgttggct acaatgccaa gcatgatttc ggcgatttta gccttatctc      780
caccggcttg ttcatggatc tgcgtgaaac ttgcagagtc tatattcaaa gtctaacatc      840
gataagaatc tcattgtcgt agatttcatc catgttgttg tcactttttc agcgggctgg      900
ggtagaacgc cctgaggggc taaaacacgg ttgtgccgta tttgtttcct ttcttttgca      960
ttgtcgaaac gtattgagtg attttgtgag ttttggagtt gttatttgct aagccccaat     1020
atccgacggc ttctgccgga gtggctatct cacgacccat ttccttggcc atacgaacac     1080
tttttctacc aattctccat tagagcgagc taaaactcct ttggataata tacattgtct     1140
tcgaaaccta cacgcacatg tcctccatca atgataccag tgccgcgagg ggaaactcat     1200
agcgtcccac acctgctaca gtatagtggc atctgcgggg atactttcgc gaaggaaaac     1260
gaaatcacgc attttccgct gataccgcca tttacaccca ttacgaagtc gaagtgcata     1320
gggattggat ataacctttg cggtgaagac gaagagccat gtncgatcat gccttgtcga     1380
agacttcaag ttcaggtttg atgccacgct cgatcatttt ccccgaaat atttgatcgt      1440
gttttccgta ttggtgaaca cttcatcacc ccgaagttaa gggtgccaca atccaaagta     1500
gccatttcgg gaaaaagctt gtcggttgca gacgttcatc attcgtcatg cccacagcac     1560
ctcctgtcaa ggctggatga ttacatcggg acataccgcc ttgatggctt ccatgactct     1620
ttgaagcgat ttctatcttg agtaggggta ccatcatcgt atctcaatgg agatgaatga     1680
tgctggcacc tgcatcatag gccgatttgg cttcagtaca cactcttcta ccgtgtaggg     1740
```

```
aacggccgga ttatgctctt tcagacctct gcaccgcaga tggctgccgt aatgatcatt      1800
ttttccataa tttcagtcgg tataatggtt ttacttattt gttgcgctgg caattagccg      1860
gtccacacaa gtgccggtag cacggcaaac aacaataggt tcgtcaagca ctcggctgcc      1920
gactccgaaa tatccgtacg aggacgaatc accttacgag ttcgaatttc atctttcgac      1980
tggtatttcc cacatgagtg atttcgcctc agcctctata taatctccgg caaataccgg      2040
agccaaaaat tccacatttc ataagcacag aagaggcctt catcaccatc ttgcatgata      2100
aggagtttgt ggcaacgtct ccgaagagtt ggagcatgcg agccccatct actaagtacc      2160
tccgtaatga gcatcatgcg cactcatccg aagacggatc attgagtctt tgtcatagtc      2220
gtattggagt tattgtgagt agttgatttg tctagagcag ggagccgatt agcggaggat      2280
atagtccacg aatatgccgc tggatggatt tgttccatgg ggatctgtcc gatggggtgg      2340
atttcttcga ttctgccact acacagtctg ctgccattgc catcaggggc tggaagttct      2400
ggttgtgcct ttatagatga gattcccaaa ttcatcgcca acacttccct gataaaggca      2460
aagtcggcac gga                                                         2473
```

(2) INFORMATION FOR SEQ ID NO:1359

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 597 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...597

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1359

```
tttcatcatt tttggttcca aaatcgggag gcactcctat cgaatcacct aaaagagcct       60
cgatattgcc catgaagtgt aaagaatcct tggcagataa tattcagttg gattaaactc      120
catgtgaaag cagatttaat tctctgtttt ttttgttggt ttttatctaa agtttatgtg      180
tacatttgtt tttcaaactt caaaaatcaa ttcgtatgga ttttaaagac atcttgaggc      240
aacttcagag agaatcgaaa aacttagaga caatttgcaa acagaggagg caacaagaat      300
gcacttatca tgccatttat tcaggcgatg ggatatgacg tgttaatccg ttggaagtta      360
ttccggaatt tacttgcgat ataggcacaa aaagggagag aagattgatt atgcaattat      420
gcgtgataat gaacccatca tttgattgag tgcaaacatt ggcgcgatac ccttactctt      480
gccgataatc actattaagg tactttcatg tttcgtctgc aaaattcggg atgctaacta      540
cggtatcatc tatcgcttct atacagactt ggatcaagct aataaaatga tgaaaac       597
```

(2) INFORMATION FOR SEQ ID NO:1360

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 657 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...657

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1360

```
gggcaaaaac tcctcgaaca actgatcttc acctttggga gtagggccga aataatcaaa    60
ggagttcggg cgtcatcgat caatacggaa tccacctctc gactatggcg tagttgtgct   120
tacgctgcac caagtcctta ggactcgggc catattgtcg cgcaagtagt cgaagccgaa   180
ttcgttattg gtgccaatgt aatatctgca ttataggcct tgcggcgggc atccgaattg   240
ggctgtgctt atctatgcaa tccacggtta aaccatggaa catatacagt ggcccatcca   300
ttccgagtca cgtttagaaa ggtagtcatt gaccgtcact acagcacgcc gttaccagtc   360
agagcattga ggaatacggg tagggtagct acaatgtctt tccctcaccg gtagccattt   420
cggcaatttt tcctttgtgt agactgtacc accgatgagc tgaacatcat agtgaatcat   480
gtcccacaag tttcattgcc tcctgccacc cagtggtttt ggtagacggc ggtatctcct   540
cgatcgagac gaaatcatgg ttgattgcga gatcacgatc aagatcaggg ctttgactcg   600
aatagttcgt ttgggcgaat ctgcgacagt atctttgtaa tagcaaagct tcgggag      657
```


(2) INFORMATION FOR SEQ ID NO:1361

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1089 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1089

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1361

```
ggacactaat ggtgaaaata gcgaattgtc ggtttgctgt tgttataaaa acaatatctt    60
tgttcccatc gtagtggtcc ctgctcgtct cgaacaagtg agtggggtgt aagagggaat   120
cgggtgagaa tcccgagcag tcccgctctg taagctttta ccgccgtgtc ggttttgaca   180
tgcggactct tgtcgcttcc aaatgatgcc actgttcatt ctccactatt agaggtggag   240
ctgaagggaa ggcgcgacaa acagaaaaga gatgaagtaa gccagaatac ctgctctacg   300
agttgcctat aaagtatgga gagaagacct cgaggaaagg agttccccgg cactaagaga   360
atagatctca ggaagtattt ttttacaata actattacaa tggaagaggt aatccttcgc   420
atcgtaaagc gtgatggtca ttgcagtcgt tcgatccgga aaaaatccgt caggcgataa   480
tcaaggctta cgcgcaggag gtgtgcacga agaagctgca cgtatcgaca atattgtccg   540
tctgtaaccg attttgctcg tcagagcggt gagcttgtca ccgtggaaaa atacaggatc   600
gtgtcgagga ggaactgatg cgtttgaatc ctttcatgcc aaaaaatata ttatctatcg   660
agagtggcgc accgtagagc gtgacagcgt acatccatga agcatacgat ggacggcatc   720
gtaacgatag agaagacgat gtgaatctgg gtaatgccaa catgagttcg catactcctg   780
caggcaaatg atgacttttg cttcggaagt aaccaaggac tatgccagca aattctgctt   840
tcgctacgct atagcagagc acacagggca ggagatatac atttcatgat ttggactatt   900
```

```
atccgaccaa aacgactaca tgtgtccagt agatatagca gacctctacg aacgggggtt      960
ccgtaccaaa aacggcagca ccgtacaccg cagaatatcc atagctatgc aacgctggct     1020
accatcatat ccagaccaat cagaacgaac agcatggcgg acangctatc ccggccttat     1080
ttcttcatg                                                            1089
```

(2) INFORMATION FOR SEQ ID NO:1362

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2897 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...2897

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1362

```
tgcgatttct tgtatctgcc cggtggttat ccggagtttt acctgccgga ttgagtgcca       60
acgaatccat gaagcggtcg gtacgggact atatcgagcg ggaggttatg ctctggccga      120
gtgtggaggt atgatgtacc tttgcgaacg atacggggca tggacggacg ggactatccc      180
atgtgtggcg tattgctgag acggctacga tggaaggaat gcgcctgcac ctcggctaca      240
ggcgatggta tacaagggga aagagctacg aggacatgaa ttccactact cttcactatc      300
ggctctacgc cgtccgtggc acagcagtac aatgtgcgag gcgagccgtg gagactccgc      360
tataccgata caagaatctc ttggccggat atcgcatctc tactggggtg agcatgacga      420
tctgtggatg tggttcgact gtggaagcga aacgatgtaa tctatgatat atacgaagac      480
aggagacaaa gaaccaccgg catattcggt ggggagcgtg tgccgaaaga tgatgtacgg      540
tggaagccta cggcacgatg gatgagctga atgctgccat cggcatgacc ggacattcct      600
gccggaggag gatgagcgtc agaccgtgct gtacgatttc agatgcggat gatggcagcg      660
atgagtatag tggccactcc tgccggaagc gtgagcagaa tcccaatcat ttccccgaag      720
aagcagcagc caactcgagg cttttatcga caggcttttg gccgaaacaa ccgacaacgg      780
ctactcattc ttccgggcgg tacgccgctt tctgctcatt tgcagttggc tcgacgatag      840
cacgccgagt ggaaagaagg ttgtggacac tgcaccgatc cgtgaagttc cggatgcaat      900
cttgaagtgg atgaatcgcc tgtccgatct ttcttcgtga tggctcggca cgaaatgcag      960
cagcagggtt ggagcgagga aagtggcata gattcgccta taagagaaag aagaaatgac     1020
ggaaggcgga agctacggcc gattatgttt gtcggcacag gcagcgatgt aggcaagata     1080
ttatcgctac gggtttctgt cgcatttttc ggcaggacgg ttatcatcgg ccccgttcaa     1140
agcgcagaat atggctttga attcgttcgt cacgccgaag gtttggagat cggacgagcg     1200
cagctgtgca ggccgaagct gccggatccc atgtcatacg gatatgaatc ccgtgctgct     1260
caagccgagt tcggtcatac ttcacaggtc gtgctcaatg ccgtccgat aggcaatcgg     1320
gatcttacga atactttcga cgagagggga gggacgaact gcgtacggag gttacgccgc     1380
tttcgaccgc ttggcttctc gtttcggccc cgttgtaatg gaggagcggg cagtatatcc     1440
gaattgaatc tgcgcgatac cgatatagtc atatgccgat ggccatccat gcaggtgcat     1500
gcgtgatcct tgtggccgaa tcgaccgtgg aggcgtgttt gcttcggtct acggttctat     1560
catgttgcct ctgccgaaga gcgaaagtat gtacgaggca tcatgatcaa taagtttggg     1620
gcgatcttcg ccttttcgac gaagggaaaa agatccttga ggaatttgcg gtattcccgt     1680
tgtgggagta attccttact ataaggatat tcatacgagg aggaagactc cgtagcactg     1740
tcggtcaagc agtatgctgc cggaagggac gggtgaatgt ggctgtagtc ctgctgcgat     1800
acttatcgaa ctaacggact tcaacgtttt ggaacgcgat cctcgcgtac acctttatta     1860
tagaacaata cggaagagtt gcgcaaggcc gatattatca ttctacccgg cgcaagagta     1920
ccttggccga tctctatgaa ttgcggcgca atggtgcggc caagctatcg tacaggcaca     1980
```

```
tcgcgacggg acaacggtat tggggatatt ggcggattcc aactcatggg catggaggtt    2040
tgcgatcccg accatataag ggcgatatag aacgcctgcc cggtctcggt ctgctgcctg    2100
taacgacgtg atgacaggcg agaaggttac acgtcgcacg gcatttcgct ttctggtcat    2160
acggatgaat gcgagggata tgagattcat atggggcgga cgatgctgtc gaaggtgcag    2220
catcttctcc actgaatcga ctctcggatg gaacgaggat ggatatttcg tggatgctac    2280
ttgtatgggt acttatgtgc atgtatcctg gacaatccgg ccgtaataga ctatctgctt    2340
tcaccgtatg caacaaaatg gaagagcgga aaagcttcga ctatgtccgc tataaggatg    2400
acaatacgat aaattggccg accatctgag acgatatgcc gatgtcccgc gatttaccaa    2460
ctgatgaaag acgatgatta aaggacacgg agatgacctt accgtcacgg ccccattcgg    2520
gcaaatttca gttcgaatgt ttataacgca ccgagcgtca gggattgctg gatcaccttc    2580
acaggagatt ggatagctcg gttcctatcc ggagccggag ccttattctt tggagaaagg    2640
tttggcgatt atcacggtat agctgccgat tcaatcagtg tgaccagcgg tgccacgaag    2700
ctatttatct catagcgcag gctttccgtg gatcttcttc agcctagtag ttcccacttt    2760
cagcgaatat gccgatgctt gccggctgca tggcatcgtg tggatttttat ttccaagccc    2820
gaagaggctt cttctcgata tgtatggtct ggctctgtaa tccgaacaat ccgacgggac    2880
                                                                     2897
gtgtttggaa gcaagcg
```

(2) INFORMATION FOR SEQ ID NO:1363

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1215 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1215

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1363

```
gtttggattt gcaaagggga ggtttacgag aaacgcgacc tcgcccccat tttgcagtgg      60
ccaaaaacca aagccgtcgt cccaatgcac agggcggcac aaccgtggcg gtgatcgcaa     120
ccgtagaaga aaaggtaatc gctaacatta gaaagacaga caaaatgtta caaccaaaaa     180
aaacaaagtt tagaagcagc agaaaggtcg catgaagggt tttgcccaga gaggtaacca     240
gttgtttttcg gttctttttgg aatcaagtct ttgcagagca agtggataac cggtgtcaga     300
ttgaggccgc tcgtattgca gtgactcgct atatgcagcg tcaggacaag tatgggttcg     360
tattttccct gacaagccta ttaccaagaa ggagaaggtg tccgtatggg taaaggtaag     420
ggtgctccgg aaggtttcgt tctcctatta ctcccggtcg aatcattttc gaagtggaag     480
gtgtgcctta gaaatagcta aggaagctct tcgtttggct gctcagaagc tccccgtaag     540
actaagttcg tggttcgtca cgattatgat atccaaaatc aaaatgcgaa ttgtcatgaa     600
gattgccgaa attaaagagc ttgcaacaaa agagctcagg agcgattgga tgccgaagtg     660
gctgcttatg accaaatgcg aatcaacatg cggtttcgcc tttggatagt cctgctaaac     720
taaagcatca acgtctatga ttgcgcagat gaagacagtg ctgcgccaac gcgaactcaa     780
taaaaaatag agtgcacaca tggaaagaaa tcttagaaaa gaacgtgtgg gtgtgtctca     840
agcaacaaaa tggataagac tatcacggtt gctgtgaagt ggaagagaag catcctatat     900
atggtaagtt tgtcaataag acaaaaaaat acacgcacat gacgagaaga atgaatgcgg     960
tatcggtgat acggtacgta catggagacg cgtcctctga gtcgtacaaa gagatggaga    1020
ctaactgaat aatcgaaagg gcaaaataag atgatacaac aagaatcaag actcgttgcg    1080
ctgacaacag cggagcaaaa gaagctctct gtattcgtgt tttgggcgca cgcgcagacg    1140
ttatgcctct gtgggtgata tcatcgtggt ttcggtaaga gtgttatccc ttcaagcgat    1200
                                                                    1215
atcaagaaag gtgct
```

(2) INFORMATION FOR SEQ ID NO:1364

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 693 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...693

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1364

ctgcggatct gtcgttgccg aaagtcggtc gatgcacatc cgacttgctc cggtgtagca   60
agcactcctc aagacgttgg atgaaatgga aaagaccgta tcgagcaagc cttggcacga   120
aacggcagca acctttcgaa tgtggcaggg aattaggcat cagccgccag actctgtata   180
ataagatgaa acgctagggc tgtagcccct cttctatggg aagacggaag accggcagtt   240
tcggctgcat ctgttattta ccatcgtcat ggcggtggtg ggtacttggt cggcgctgca   300
ggacattatg ccatcactgt ttttgcagcc ggactcgtta tctttccgcc ttgcggttgc   360
gtttacttta tcggcgccat cttcaagatc ttccctgctc ttgaatgcta tcgagaatgg   420
cgattattcc gtgcgctttt cgaaatggga ggcaatgtct cgcatcgaac attcaaccgc   480
acgcttaatc tatcaaggag atcctcagcc gttctcgtga tgaggctata gccggcgaga   540
gtttctcgta catgtattgg aacagattcc tgtcggcatc atgatggtgc tccggaagga   600
tatgtctatt ctaccaatac agtgctgttg cgcctcccgg gttacccgtt atcacacacc   660
ttcgatcagc taaacgtgtg tcgccgacat gcc   693

(2) INFORMATION FOR SEQ ID NO:1365

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 965 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...965

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1365

```
acttcgaaat tgttatcggg tgaaggcaaa tggcgactcg aactgccctg caggctattg      60
ccacgcatcg cggcggggaa tacaactggg cgcagcagat accgtgcata catgggtcaa     120
tggagctgtc ggacttaagc tttcgtacgc cctcgtaccg acaaacccat gcagatttgg     180
ggatctgctt atggtgggca gccttgtcaa gcggaggata cttcccttac gaaagagggt     240
ggggcgttat ctttctctcg gaatggactt ggagcacttc gcttttcgta ccgatattgg     300
tacggcaggc attacgtttc tccctttgct gcacctttcg ccattccctg acgtatgaca     360
aacagcctct tacgaacggt tggggcgatt atttcgtctc tatgccgact attcgtggcg     420
gatggcacga agtgtttcgt tgcggctgtt gctcgggtat ggttccagcc ttcggatcgt     480
tttgcgatga ccacgccttg gaactgacga tgcgtatcga tcccaaattc ccaatagctt     540
tctgaaaggc aatcattgat cttttcgata tttgcgagtg gattcctcgt gatcatttag     600
tccggtaagg ttgggtgaat gccaaaagaa agaggacgcc aaagagctcc aagctccttt     660
gacagtcctt ttcgtttata ttggaaggat gtcgcttaca gctatgcgat gtccatttcc     720
ttcatgatct ctgccgtgat tccttggcat ctccgagttt gaggaataca cccgttgctc     780
gtgttagagc ggattgtcca cacctgcata accgggtttc aggtcgaagt tgcaatgatt     840
acttcggagc atcgtccacg ttcagcacgg gcataccgta taaggcgtac cctcagcatt     900
gcgagcagca gggttcatta cgtcgttggc acgattacta ccacggcatc cgtctgagcg     960
aaatc                                                                  965
```

(2) INFORMATION FOR SEQ ID NO:1366

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 592 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...592

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1366

```
ggcttctgct gtctgagcac ccatcttttt gggagtggtg aagtagcgac ttcgaatttt      60
gccatttcag catcgtttgt aggcttgatg tccgtagcta tttgaagtcg gtacgctctg     120
ccataaactt gcagataccc tcttcgtgat tacttcttga cgagccgtat tgatcaggca     180
ggcacccttа ggcatttgga gaggagttcg gcattgattg attttacagt ctcaggggtc     240
ttcggatgtg aagcgaaact atatcgcagg tttcgaacag agcatcgcga gaagaacggc     300
ctttactcct tctttctcga tatccgctgc agaaacaaat tggcgtaagc ataaatttcc     360
atgccgaagc cttttgcgat acgtgccacg ttcggcgcta cattgccgta tgcgaggata     420
ccgagcttct tgcccataag tcagaaccgg atgctccgtt gaagagattg cgatacatga     480
atacgagcat cccattacca attcgggcaa cggcattcga gttttgtccc ggcgtattct     540
cacgcacaca ttgtgggctg tagcagcagc caantctacg tggtcatacc cg              592
```

(2) INFORMATION FOR SEQ ID NO:1367

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 634 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

```
    (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...634

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1367
```

ggtaaattgg	aatttcattc	acaatattac	acaatctgct	taaagaaaaa	agagaagaga	60
ccgcgccaac	atttttttata	tgtttccttg	ccaagaaaga	gagaactcta	cattcgaaat	120
ctctttgaag	acatcctgtt	ctgaatttta	ggaatccgaa	ggccgtgtat	tatttttcac	180
tatatttgca	atacagaagc	tgattaggaa	ggcgaattcg	ggcgattttt	agcctgtaac	240
cggttctgat	cagtttttttc	tttatttggc	atgtggtgtt	gagtccggat	acttttgtca	300
cttccatagc	gttccggcaa	gcccttacca	ctctcctccc	tcttctaatt	tccactaaaa	360
aacttgcacc	aaaaaagttt	tcaacaacga	agcgagtttg	gaatgattcc	aaataagcat	420
ccaaaaggga	gaggcatcca	agtaaaaaag	gatagaaaac	tgtcttccca	acttcgaaat	480
tcgtttttcag	agagtcgaat	aacgatttgt	atataaatga	ctttcaattt	atatataaag	540
gttttcgttt	tatatataaa	tcgtttttcaa	taaatatata	gatcgtaatg	attcgtatat	600
aaatcgcang	ctcgaaaagg	cctttttccga	agcc			634

```
  (2) INFORMATION FOR SEQ ID NO:1368

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 908 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...908

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1368
```

gaatccanca	tctccctctg	gtcgagacag	tagtagaagg	cggtactctg	taatcaaaat	60
gaagccatcg	ctatctatct	ctatcaataa	aggtgtccga	tcaggataac	tactcccccaa	120
ctgtcagaag	cagagctaca	cggaagcgtg	atattacatt	tgccggaaaa	ttccgtctgc	180
gatctcttag	gatcgactct	ccggaagcgg	tgacatcact	tttgccaatg	ccacgatagc	240
caatgtctga	acgtcagcct	tagaggtagt	ggcgacatac	ggggcaatat	ccttccggca	300
ggaatgcaac	tctctcgctg	gccggttcgg	gcgacataga	ccttcgctcg	gtcatcctca	360
gagagtggaa	gccggtatca	gcggaagcgg	agtataaaga	taaagggaca	aacagccttt	420
gccgcgctga	aatgcagcgg	agcggagacc	tcgaatgccg	taacctgtcg	gcccaacaag	480
ccgacgtaag	atcagtggca	gcggagatgg	caagctggct	gttaccgaaa	agctggatac	540
aacctatccg	gatcagccgg	ctttgtctgc	tatggcaaac	ctgtcatcgt	acacacaaag	600
tcagccgttc	ttcctctttc	cgaatggttc	cttaaatcaa	cgacagcata	gattagaact	660

```
tttcatagac gcgagtagca ataggggaga cattccatca gagagaatgt actcgccctt      720
actacatttg agaagaaacc ggaggtctta tgcgggctcc ataaatgaat tttgaaacag      780
cccccgatca atcgtggatc ctttcccccg actcaatttg tttgtatttc atccggcata      840
aaaatggaat ttttaattgc atttataggt agggtgtgca aagcgcaatg gtagtttcta      900
tgtttggg                                                               908
```

(2) INFORMATION FOR SEQ ID NO:1369

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 708 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...708

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1369

```
gaagtgaccg gctttggtta tcgatcggga tccgatattt ggagcacaag tcccaccttg       60
cttctcgaca gccttgtcgt tcagcagggt gctaccctac tttacctgcc ggatgccgtc      120
tgctgatggc caataaggcc cacatcaggt tcggggtcgc ctaatggcgg agggcaatcc      180
ggccaagcga gtgatgtaga gaatctgcgc cacgatctcc tcgtacagga tgtaccttat      240
accctgttcc cggacagtgg ggcggtattc ttttctctga agagagtcgt ggcatgaact      300
tcgttatact actatccgca acggtcgatg gggaatcatt gccaaggcgg taaggatgtc      360
accaccccaa aattgctttt ggagggctgt atgtcaccaa tacgaaaggc tccggtctgg      420
ctgcttccgg tggctatatc ctattctcaa cagtgagatc agcaataccc tcggctatac      480
tgtagccctc tcggcagcgt atgcgaattg acccaaagca ctgtttgcaa tttctatagt      540
gggacaaccg ccaaggggaa gccttgcgct acgtgacggc attcgctccg atgtggcagg      600
cggatcctat actcctcatc ggacagtcgt tgatttgcac agtattgtcg atggcagtcg      660
gtctgtggtc aaacagggag ataagaagtg gaggagaaat cagtctgt               708
```

(2) INFORMATION FOR SEQ ID NO:1370

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 772 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:

```
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...772

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1370

    gtgtgacttc cgacagaaca gttgtgagca atctgtacaa ggttgtctac tttactccgc       60
    gatgtatgat cgttgaatcc ataacagccc tgtcgataaa gtgttggcac cgatttcgac      120
    atcatcttca atgataacgt tccccagtgc ggaatcttgc tgtagccttc ggcattcgga      180
    gcaaaaccga atccatcgct ccgataacgg ctcccgaatg aatcacgcaa cgcgaaccga      240
    tggaaagcca tcatagaccg tcacatgggg gtagaggatc gtcccctctc caacgacaca      300
    ccgctaccta cataaacatg cggatacaag ctacagcctg taccagcgat gccccttccg      360
    acacgtaggc aaaagctcct acatagcaat caccggcagt atcaccgatg gatgaacgaa      420
    agccgtggaa tcgactccct tctttggggc ttcatgctgt ccaccaactg cattagttgc      480
    gccaatgctg ataggcattg ggaactcgta tcagggtcgt cttcaccgat tcgcgcggtc      540
    gaagtcctga ttgacgagta ctgcatcgga ttgtgtttgg tacaaatatg ttcgtactta      600
    gcattggcta aaaacgagag acagccacta cgaccttctc tatcttggca aaagtcgtgc      660
    agtcgcacct tgggattgcc ctccacgaac cgtggaggta gtcaagctat ctggtgggct      720
    gtaaattcca tgtgacgggt taattagggt acaatggatc ttaaaacatt tt             772


    (2) INFORMATION FOR SEQ ID NO:1371

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1455 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

       (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1455

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1371

    ggcaattggc ataatttttt ttgcagacaa atccgcctct ccaaagttcc agaccggaaa       60
    tgctctgatt gcggagcgtg ttttcgggaa aagcggcgga gaatttttc cctgcggcgc       120
    gagaattttt cacttcccga accaaaagaa aaagttcccg cgccacgttt ttcagagcgt      180
    ggaaatagaa aattatgcgc gtaaacccgt ccttctctct taatacgata gcgcacgaaa      240
    tgatggtctc cacgcgaaat gaactttggg gagcttgatt ccgagacaaa taccctcatc      300
    ccctgccaag ctccatagat gccaaaaccg aaagttgcta acttgttaag taatcacggc      360
    cgacaccggt gtctgccgcc ggtactaagg aacattccaa tgcaattcaa ttatgatgtc      420
    atcgtggtgg gtgcgggcca tccggctgcg aagcggctgc ggctgcggcc aagctcggtt      480
    cgcaggtatt ctcatcacgc cggacatgaa caaaatagcc caaatgagct gcaatccggt      540
    gtcggaggaa tagctaaggg ccagatagtc agggagatag acgccttagg ggacgaatgg      600
    gtatcgtcac ggatgctacg gccatccagt ttcgtatctc aatcggagca aaggccctgc      660
    catgtggagt ccgcgcgctc agagcgccgc atgcgcttca tggaagcgtg gcgcgatata      720
    gtggagcacg agcctatctg tacatgtggc aggacagtgt acgctgcctc tctattcgtc      780
    aggggccgtc gcgggagtcg tgacggctct cggggtagag tttcaggctc gtacgtggtg      840
    ctgactacag gcactttcct cggaggtgtc atgcacttcg ggagcgtatg atcgaaggag      900
    gacgaatagc cgaaccggct ttccacggca tacggagcag cttcgtgatc tgggcttcag      960
    aaccgacaga atgaagacgg gactccggca cgaatcgacg gccggagcat cgatttcagt     1020
    ctgaccacaa gcagtcggga gaagaggatc accaccgttt ctcctatatg gatacgcccg     1080
    aagggtgcta cgccaaagga gttgctacgc actctacacc aatcccggtg tcatgagata     1140
```

```
ctaagcaaag ggttggatcg ctccccctg tacaacgaca gatccaaagc atcggccctc    1200
gatactgccc cagcatagag accaaatcgt caccttcgcc gacaaggaga tgcaccaact    1260
gtttctcgaa ccggaggaga gaccagtaac gagttttacc tcaatggctt ctcctcgtct    1320
ttgccttgga gattcagctc gaagccctga aagccattcc ggctcttcgc cagtgcacat    1380
ctatcgtccg gggtatgcca tcgaatacga cttcttcgat ccacacaatt taagacatac    1440
gcttgaaacc aagcc                                                     1455
```

(2) INFORMATION FOR SEQ ID NO:1372

     (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 481 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...481

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1372

```
gagagggaaa agtgctcaga acaagtaaaa aaatgaccgt catagctatc atgaatgaag    60
aacggcaacc tgtgttctct ttcgtttttt gatgagtaaa ggtaaaagca aaatctttcg   120
atatgggtca ttttcgaagc tgaaaaaacg gaatattcac cgaaaaatat gcgccaaaaa   180
agttttcaac aacgaaaagt gtttggaatg attccaaata agcacttctg agagatcgaa   240
attcgggtaa agtacgtaac atgacagcct ttttcagatc gaaaagctct tttttagtt    300
cgatgaacaa tctatatatt aatcattttt gatttatata taatcgtttt cattttgtat   360
ataaatgatt ttcaataaat atatagatcg aaatgatttg tatataaatc acaacttcct   420
aaaggctttt tcttgaggga taacagaggc accatcggat tttctcttga atcgacggtg   480
c                                                                   481
```

(2) INFORMATION FOR SEQ ID NO:1373

     (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 741 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...741
```

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1373

```
ggcgatgagt tcgacttctc cgtattggca ctttatgatg aaaaacgcta tcagttggga        60
ggaggcgtct ataatgtgca gaaggaaaag ttcaaactaa tgttttctat cagagtgata       120
gtgcaggcgt ctaccaacca tatatcatga aggcaagatt aagggacagt tgcttctgcg       180
cgtgttgggc atggacgact ggatgccaaa caagagcctt accctgatgg tacgtacgac       240
tttgtgatgg ctatacgatc ctccctcaga aaggagttgt gatcctccct accgggagcc       300
gttcggaaag acccttgccg atgcgtttgg cgatcctgta ttgcgaaaaa gtactgcttc       360
caagagctat acgatacaac ggcagtggct gccagcaagt ggcagagaag aacaaattta       420
tcttccgagg cgaatacaaa gttctccggg cggagacatt tctttgggag ctatcaacgt       480
aacacccgga ccgtcgtagt gacggccggc ggtgtcaagc tgacggagaa tgtcgattaa       540
cggtagacta cctctccggc aacgtatcga tcatcaatga agcgattcct cttcgggaac       600
tcccatcaat gtgtcgctcg agaaccgagg gctgatgata tgcagcgcaa aacgatgttc       660
ggtatagatc tgaactacaa cttttcaaag acttcaccct cggcggnacc ttcatgcacc       720
tgagcgaaat gccgcgacga c                                                 741
```

(2) INFORMATION FOR SEQ ID NO:1374

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 639 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...639

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1374

```
tcatcatctt ccaaatcatc gtcaacctgc gcgacagcct tcgcaatatt ccaaagagag        60
ctttcttgtc cttacctcat tgggagccac tcatgctcac tgatgcgtca tctggtccta       120
ccggccatta ctcccgaagc actctcccac tacgagtggc cattgggaca gccatatcag       180
tactcttcgt gacagaacat acgggacgaa taaagggcat gggattcttc attgtcgatg       240
catggtgcgt atcagctata cggagatgta cgtgggcatc gtggtttttag ggatgcaggt       300
ttttccttt ttttgctcgt ggatggtctt gagaccgcac tatcagatgg aggaacagtt       360
agccatacaa tcaaagaaat catcattcaa caaacaataa cgatcaagaa atgaaagtaa       420
aacatctatt agctgcatcc tgatgatgct aggaacaggg aatatttgcg cccaaaagtc       480
cgcaaacagt ttttcaatgc aatcaaagaa cgggttagcc tcagtggtta tgcgcaagcg       540
ggttttcctc ttgtggcttc cctacggcga gttccgaaaa nggagaacac acacattcga       600
tgtaaagcgt atcaaccttc gtgccatgtc gcatcacga                              639
```

(2) INFORMATION FOR SEQ ID NO:1375

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1120 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
     (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
     (A) NAME/KEY: misc_feature
     (B) LOCATION 1...1120

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1375

```
ggcaaaaggt gttcgctcgc cggaagctat tcgtggtcgt atacagggtc ttggcgccag    60
aagacggtag accttcccgc aggtacgaaa tatgttgctt ccgtcacttc caaagcacgg   120
atatgttcta catcgacctt gatgaggtga gatcaaggcc aatggcaagc gcgcagactt   180
cacggaaacg ttcgagcttc tactcatgga gaggcaccag cggaatggac tactatcgat   240
gccgaggcga tggtcagggt tggctctgtc tgtcttccgg acaattggac tggcgacagc   300
tcatggcggc accaacgtag taagctcttt ctcatggaat ggatggcttt gaatcctgat   360
aactatctca tctcaaagga tgttacaggc gcacgaaggt aaagtactac tatgcagtca   420
acgacggttt tcccggggat cctatgcggt gatgatctcc aagacgggca cgaacgccgg   480
agacttcacg ttgttttcga agaaacgcct aacggaataa ataagggcgg agcaagattg   540
gtctttccac ggaagccaat ggcgccaaac ctcaaagtgt atggatcggc gtacggtaga   600
tttgcctgcg ggcacgaagt atgttgcttt ccgtcacaca attgctcgga tttgaactac   660
attcttttgg atgatattca gttcacatgg gtggcagccc caccccgacc gattatacct   720
acacggtgta tcgtgtggta cgaagatcaa ggaaggtttg accgaaacga ccttcgaaga   780
agacgcgtag ctacgggcaa tcatgagtat tgcgtggaag tgaagnacac agcggcgtat   840
ctccgaaaga gtgcgtaaac gtaactatta atccgacaca gtcaatcctg tacagaacct   900
gacggcagaa caagctccta acagcatgga tcaatcctta aatggaatgc accggcatct   960
aagcgtgcgg aagttctgaa gaagacttcg aaaatggtat tcctgcctca tggaagacga  1020
tcgatgcagc ggtgacggca acaattggac gacgacccct cctcccggag gctcctcttt  1080
gcaggtcaca acagtgcgat ctgtgtctct tcggcttctt                        1120
```

(2) INFORMATION FOR SEQ ID NO:1376

     (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 1418 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...1418

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1376

```
ttgagtgctn cggtaccgat agacgaattg aactcattta tcggctttgt gatgagttag    60
gacttgccgg aagaggatcg ggatttttntg cgtaccatca gcacaaagct tttcaccgtc   120
ggatccctat ctggccacaa atcaggaagc agagagctga tggtggagag tcgagtgcat   180
```

```
cccgaaacga  tagaactgtg  gagcaggaaa  tagatcgttt  ggacaatgcc  attcccaaga       240
tgacgctttc  atcttgccgg  ggggtagccg  ttctgcctct  ttggcgcatg  tttgcgtacg       300
gtatgccggc  gagccgaacg  tcatatatac  cgcttgagtg  aagggcgctg  gtagaggagc       360
ctgtgatgcg  ctatatcaat  cgtctgagcg  atatttcttt  gctctggctc  gaaaagaagt       420
ttggcgtacg  accggaggtg  aattatttgg  gataagacct  gcgattgaga  aaaggctgta       480
gaatcaattc  ggggcttaat  aaagaaggag  cgagaaaagg  cttcggatat  taggtttagc       540
agaaaaatct  tttttatct   ttgctgcttt  catcgaccga  ttatatcaaa  taaaaacaaa       600
tgattgcttt  ccaagccctg  caagccatct  ctccgatgat  ggccggtatc  gcaacaaagt       660
agaagtactt  agtcgctatt  tttcagagga  tctctaattc  gctatcgtgt  aaaagtggag       720
gtggagtatt  tcatcctctt  tgcaatgaat  tgccttcgct  gaaagatgtg  tgccctccat       780
ctttgaggaa  gagttgcgcc  gtatatacca  agactttagc  gagaaggatg  ccgacgtgta       840
aaggaaatag  aggcggtaac  gaatcatgac  gtcaaggctg  tgagtatttc  ctcaaagagc       900
ggttcgaggc  catggggata  cgagatgcca  agaatttatc  catttcggtc  tgacctcgca       960
ggatgtaaac  aatacggctt  cccgatgatg  atacgcgagg  caatgaccga  ggtttacttg      1020
cccgctttaa  ggagctggtg  gagcagcttc  atgcttatgc  ccttcagtgg  aaagatgtcc      1080
gatgctggcc  aaaacgcatg  gacagccggc  gtcgcccact  cgcttagaaa  ggaaatagaa      1140
gtattcgtct  atcgcttgcg  caagcagatc  gacttgtgct  ggaagtacct  cattcagcca      1200
aattcggtgg  tgctacgggc  aatttaatgc  gcatcatgtg  gcttatcctg  atcatgactg      1260
gagcagattt  cggcgtcggt  ttgtaacttc  tctcgggctt  gaacgggaag  aactcactac      1320
acaatatcca  actacgacaa  acatggcagc  cttattttga  tgcctgctgt  cgatcaattg      1380
tgatactgat  cgacctctgc  cgtgaatttt  ctggcaag                               1418
```

(2) INFORMATION FOR SEQ ID NO:1377

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 575 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...575

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1377

```
tccaatcgta  ttccgcttca  tcaaacgggt  tggcttgggc  gcgaattaat  tcttttcatg        60
gcatgtgggg  agatcttact  ccccataata  agcccggacg  gtcggtagtt  ttctctttcc       120
cgaaaatact  atccccatga  atcatactgg  tacatggaag  ggagcatagg  tctggagaat       180
atcttccggc  tcctgccatc  gaatacttcc  gacgcttcac  ccaattacaa  acgactccga       240
ataaagggga  gtccgtgctc  gcttccagat  cactttctga  cctctaaagg  aaagggaaat       300
gccgaaactt  ttcgttctga  catttcctcc  tcttcgaagc  gatcttaata  gaatcagagc       360
ttgatgaagc  gttcggccgg  tgtgctgcct  tggtcatgag  tttgatcaca  taggccc.cgg       420
cggtcaaaac  cttcacgccg  acatgcgagt  attctccata  gagagcacca  aacgacctga       480
aaaatcaaat  tccggacacc  gaagtcacct  tcatgcttaa  tattcagtac  atccttcacg       540
gattggggta  aaccccggaa  tcagaagaaa  aatag                                   575
```

(2) INFORMATION FOR SEQ ID NO:1378

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 576 base pairs

(B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...576

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1378

```
gcgatagaaa tgttcgtcac ctcgctaccc gttccgcatg ttgtgggcaa atgatcagtt      60
ctttctcttt gataagaggt attttgcggt cgaatgcacg agtacatcat ttaatccttt     120
cagaacgaaa agtttagaga tgtcaatacc gtacctcctc cgataccgat tacgcggtcg     180
aactggatat tacggagtct gccaagatgg tattcatcat ttcgtcagaa ggctcgcctt     240
gcccaatttc tcctgcataa caaaatggca ggggagctgg catgccttca tataggttca     300
tagatgaact cgttggtaat taccaagtcg cgttctccaa gacgaattcc ttggcaaatt     360
ctgcaaaagt gtcaaagtga tgtgttacac tctgagtttg aaaagttgca taatagtatt     420
attggttttt ggaataatcc taactttttt tcttctcttc ttatccgaaa cgtttgcgga     480
gatgtttcgt agttcctctc tgaaatccgg gtgggctatg gcaataagag cttctgctcc     540
tggcgcaaac tcttcctttg agttgggctt ataccg                               576
```


(2) INFORMATION FOR SEQ ID NO:1379

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1665 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1665

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1379

```
gaagaagagg cttacttcat tccgggggaa ttcgaatgcg agggagattg acggataagg      60
cggtgcggga tttgaaggat gccgtattct ccggtatcgc atgccttgcc cggaatccgg     120
agatatggat aaggaagctt accgtacgct tttgaggaaa tcatgcgccg gatagattcc     180
ggggtattgg aaaagggggtt ttatcccgca ccttgaccct taagaggggc gattccggat    240
tctccacgtt ttttcttatt gggagttgct ccggagggct tatccccatg ctttgttttc     300
ctttatttta ttccgggaaa gggagtatgg gcgggagcga gtcggaactc ctgttggatt     360
atacgaaagg acgtgtaaag acgatggctt tgccggaacc agacccgtat ctttcgaagg     420
cgagttgctt aagccgtgga ccaaaaagag ataagagagc aaggagtggt cagggactat     480
```

```
atcagggaag gcttgagaac cactgtcgca gcgtggagat gtcggagacc cgtacctttt      540
ggccgggaat atttgccatt tgtgtacgga ttttacggct ttgaccggga cggcttagaa      600
agcttgctca aggcgcttca tcctaccccg gctctcgcgg attcccccgt aaggaagctt      660
tggcgtgtat ccgggaggtc gaggtgatga acgcaaattt tacggaggat atttggggcc      720
tgtgggtaag gatgcgcgag attgtatgtg aacatccgct cgatggaatt gtttcccggg      780
gcatccggct ttatgtggga ggaggtataa acggagattc ggtattcgaa gacaatggga      840
agagacctcg gataaggcgg ctactctttt gaatgtgctt ggatacattc cgtcggagat      900
aaggcggact ataaatgata atgcaagatg aggattcgga ttattcggat aagaaaggcg      960
taagcgtatt gatggattta tcgagatgaa gggcatacgt aaactcgtta tgtcgcccgg     1020
ttcgcgaaag ctcctcttct gttttctttc tcccggaatc ccgctttcga gaaatacgga     1080
ttgcggatga gcgttccgcc ggttttttcg ctctcggatt ggctttgcct cgggtgaagc     1140
cgtaggattg gtttgtactt ccggtacggc catgttaatt atgctcctgc cgttgccgag     1200
gcttttaca gggggattcc tttggcgcgg taacggccga ccgtccggcc gaatggatcg      1260
accaggacga gggaagacga ttcgacagga gggagctatg ccggtttcg ttaagtcgta      1320
ttgagcttga gagcggaatt cgatacttcc gcctcggcat ggtatgccaa tcccgtttga     1380
atgaggtgtt gaaccatgcc ctgatgcccc ggcgaggacc ctacacatca atatgtcgtt     1440
ttgcgaaccg ctatacggga cttcctccgg tattccggaa aagagcgggc gataacgttc     1500
gtgagggaac ggcaagaatg ccggaagagg tatgggatat gctcgtaaag cggttttttgg    1560
aagctcccga gtgatgatcg tcccggtttt tatcctcccg acgaagacgt gtccgcccat     1620
tgcaggatat atgcaaattt cccatacggt ttgtttgcga gagtc                     1665
```

(2) INFORMATION FOR SEQ ID NO:1380

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 734 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...734

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1380

```
gggcttccat ttgggcatag tctgtatcac gcggagggct tccttgtcag tgcagggtca       60
atacccttaa caacagttgc ttgtgtcaca gaaccatctt ttcgaccacg aaacgaacga      120
ttaccttacc ttggatgccc atttcggagc ctgctcggga tagaccaaat ttttactaag      180
ccatttagag agagcatata accacccggg aactctgccg gactttctac cacttcgtgg      240
attttttcctc ttcttcctca actttaacgg gggcaacggg cgcaggcggg ggcacggttt     300
gctctcatcg acagagacca aagcgatttt ctccactttc tggtgttatc taccacctta      360
aattcttccg gcagctgtac ctcctgttgc tgggttgctc cggctcgggc tgctccggct      420
ccggctcgtt ttcttcgagc agacagtttc ctccatgtcg gcaatatcca ctttatcgcg      480
tgtataggcc ctatcttatc gtaagtacga tattccaaag ctacatacac gatcgcgagg      540
ctacgacaag ccccaaaagg aagttcaaac cttttccctt ctccaagtgg ccttaggcga     600
tttcttgatt tccatatctg atagtattgn ttttgattct tgctttgggg caaaaataca     660
aagttttttc atncccaatt cgttttggta gaaaaaatca ggcgtatggg gcaaaattgc      720
aggctgcaaa aatc                                                        734
```

(2) INFORMATION FOR SEQ ID NO:1381

(i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 765 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...765

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1381

```
agcggattgt ccttttatag atgtacgatc gtaaaaactt ggaaataacc actcgatcta      60
gcccatacta agaagaaaga gcctcatagg atcggcagac gatcccatga ggccccaaac     120
cggatatcgg caacggctaa aagcggtacc tatgcccacg aagaagtcac gattataagc     180
gtattcgtta tttccctttc tcttagagcg gtcgtcgaag aggattgcct attgtcgttc     240
agtcgggaat atcagaacct ccacctgaca caatatccac aaatccatgt tcatgcctat     300
ctgtatataa taacgcttat agtggaatgc ggctattatg tttccccgat gtcccagcgg     360
atatttgttg ggccaccaag cgttgggcca aaaactctgt gctgtagttg ttcggcttcc     420
atccttccaa cttctgccga ttgtaccata tataccgtat gcaaggaaag gacccgcttc     480
gatcgaaacc ccatgtcatt catcaggtcg aaccgcatgc cggcattgat cggcagttga     540
gatagtgcaa gcgagtggaa accatcgtaa tataggtacc aggaaccatt cgggtatatc     600
ccattcggtt ttggagccct tcatcgtata gttcagaccg gagccaagta gaatcctctt     660
gatccgatca tgaattcggc agcggcccga cccgcaggcc gacattcatt tggtgtccca     720
cacatatccg tctctttcat gctctgattg ctgcctacga agttg                     765
```


(2) INFORMATION FOR SEQ ID NO:1382

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 573 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...573

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1382

```
ggccgtaacc tgtttagaag atctttatgg acttgatagc catattcgaa catcaactgt      60
ccggcgtgag caatgatagg caaagattag acaatgtgaa gacaaaacgg aacgacgaga     120
gaagaatacg aatctcctat ctgttgagaa tagcggatgt accgtgggtc tgctttcggc     180
```

```
taatctcccc ttggcaatgc caagcatcca ttgacaaaag tgtatgcgac actgtgactg      240
aaggtaagcc ttcgaaagga gaccatccgc agaggctaag tatattatcc gcagtacggt      300
gtgaggagat gacggatcca caagcaccag atcggcatag tagccggacg aatgtatcct      360
ctcttctcta tggcgaagag agtggccggt attgagccgt tttgcttact atttcttcga      420
tgctgaatat gccttgattg cgagttcgag caaggcgagc aaggagtgct gcacgagtgg      480
cccgccggat caacctgcaa gcaactgcct tctttttctc ttaagcagat gccgggcatg      540
atccgtagct ataatatcga taccgttcca ttg                                  573
```

(2) INFORMATION FOR SEQ ID NO:1383

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 915 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...915

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1383

```
tcgatacttt tgtcagaaaa aatttcggcc gagatcccgc tccgtttgac acatcggctg       60
cttgttcgta caaagattcg tattcggact cctgaagtca cggatgaggg aaacgaactc      120
accaagacgg cgtcgggctg tagcactaga tcgggaagac ccttctgcga ttcggacagt      180
acgtcccaca acgaacagaa gaagccgtgg ctatctcgtt aagacgagac agagtggtat      240
ctcctttcct cgcttgggat aattgattac acgcctgagt gcttcgtcat cattggattt      300
acgattagac gaaaataggc caggacgtcc ttgatctctt ttccgaatag aacgaaagcc      360
caccgtatat acgaaaaggg atattgtgtt tggaagtgct tcctcgaaaa ctcggctctg      420
cgcattagtg cggtacagaa tgcgaaatcg gaataaggac aatgctcttg catcgtcgc      480
tcgacgatcg atccgctacc gtataagcct ccaaataccc cgacagacaa cccgtcaggg      540
aatacgctca cctacttgtt tgttcgaaaa aacttgcttg gggattcgcc ctcattgtga      600
gcaatcaagc tattggcagc attgacgatg ctctgtgact ccgatagttc tcctcaagtt      660
tgaaaagttt gctcccgggg aacgacttga aaagcccaga gtgttttccc acttgggctc      720
cacggaaact gtataactct gagcatcatc ccccacgacg aataccttgc ctttctcccc      780
catcactgcc tggcaatcaa atactgtgca aagttggtat cctgatattc cgtgatcaat      840
aaataatcga tgcggtcacg gtaggtctgc aagacatccg gaaatcacga aaaaggacat      900
tgttttgaaa agcag                                                      915
```

(2) INFORMATION FOR SEQ ID NO:1384

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 626 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
     (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
     (A) NAME/KEY: misc_feature
     (B) LOCATION 1...626

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1384

```
taggatgggc ttttgagaaa cattttaggg atttatggga aaaaaaatca tagatgcctt     60
cacatcatat acaagacctt gtgttatagt tgtagttgag gctctttac tggtaaatct     120
ataatatcca atcatctatc aaataaaatc aattttcagg ggtgctttcc actgatatgg     180
ttcggaattt ttttcgatta gcactagaga tagaaaaact tatcaaacat ccacgtatag     240
aatggtgata gtgaattaaa tattcaaaaa aataatgttt cgaatatgat tgaaagatgc     300
tggagattta tcgaagcagg agagagaaaa ttattattga gggatgcatc tcacagaaga     360
tttttgaga aatataaaca aacaagattg tctataatag gattagacaa caaaagggat     420
ataaatgatc ggctggattt gaaatgaaga ctacccgtga ggaagtctct aaaaaaacag     480
aagatgaaaa aaacgaatta atgaaataca ttatggaatt atcgagtgct gtaaaagaac     540
attttaaggt agtgaattca agatattgaa gatgcaagga taagtgtgcn atctggtaga     600
agaattttca ctcaaggagt aaaggt                                          626
```


(2) INFORMATION FOR SEQ ID NO:1385

       (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 2430 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: double
           (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
           (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
           (A) NAME/KEY: misc_feature
           (B) LOCATION 1...2430

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1385

```
cactattctg catgaacttc acttgaacag cttgtactga tattataagt gatcagttta     60
cttacaaaga cacgacatag agtgttcaga atatatcgca agatggtcga cataagacct     120
cccgctcgac tcacgagact aaaacaagta ctaacaaagt tttgttctta aactcttcaa     180
acaaactctc tgcagctaac tatccttccg gataactaaa aaagaagcga aaggagtagt     240
attagtacgt cttaccggct tccctatagc aaaggaaagc attttttct tacaaaatta     300
attctaacat tattccacca tcttctacgt atttatacgc agaaagcgaa caaaaaccgc     360
actactcaat aaaaaatacg cgatattgac cccgcgagag atgtagtcat gaactacact     420
caatgatact tctcaggaaa tccatttgc tccaccagtt attcaggcaa aatggaatta     480
ggccgatctc gattcggatt cctatttta agcattcacg agattgtcgc cggcaggcgg     540
gcatctctcc atctaatcgg aatctcattt ctatatagct gtctgttgac attcaatatc     600
atctgctttt ttgctctgct tagcaataga aaacgtgcac cggttcccaa acatacgcgc     660
tgaacgagag cagcatagcc ttcttacttc ttttctcctt ttacattgag ccttttgggg     720
cgcaaaggta ataatagaaa ggtaattcca atcgtctatt aaattttaat tcaaagggta     780
ccgatagttt acgcgccgaa attttctcgt ttacgacgcc tgaaagggtg gcggagattt     840
tttttgtttt ggttcgggaa gcaaaaaatt tacgcgcgag aagaaaaaaa tctcgctcca     900
```

```
catttgcagg aaacacgcac ccgcaatcga agattttcgg tgcgtatttc tgagacagca      960
ggttattgac cgggacatcg agcaatggcc aaaccttatg atttctatat cgtttggaaa     1020
ctgtcctaca tcacgtcttt accatacatc caaggcatac catcttagag ctgccaccgt     1080
ctatcccgac accgctctcg ttccgttctt cattatgcgt ttttcatttt cgaccatatg     1140
atttcctgtg aatatatttt ccacaggaaa ttgtttctat gtttgcaccg gaaaaacaaa     1200
caaaaacaga aatcaaatat gagatcgtaa tcgtaggcgg agtcgccgga ggagctacag     1260
cagcagccag actaggagaa tagacgaaaa agcagaaatc atcttgttcg agaaaggaca     1320
gaaatatcgt atgccaactg cggcctgccg tattatatag gtggggtaat caagagagag     1380
aaaatctttt cgtgcagaca cccgaaaaat tcggccgact gtgaacttgg atgttcgggt     1440
acagagtgag gtgctgtcca tcgatcgctc gacaaacaga taagagtgcg cgaagccaat     1500
ggtagagaat atagtgagcc tatgacaaat tgctgctttc ccccggagcc ttgccttttg     1560
tccctccatg ccgggggtag atagcccggg agtattcacg ctacgcaacg tagaggaacg     1620
gatgccatta aaagttattt ggacacccac aaggtgaaac gtgccacgtg gtgggaggtg     1680
gatttatcgg cttggaaatg gccgagaatc tacatcccga ggcattgctg tcaatgtcat     1740
cgagatggct ccacaggtaa tggcccggtg gatttctcga tggcaacgat cgttcatgcc     1800
cacctgcaag aaaaggtatt ggtctctatc tgggcaaagc ggtgaaaagt attgaaaaac     1860
gggagaagta ttgactgctt cgcttgactc gggcgaaaaa atcgaggccg actcatcctt     1920
ctgtctatcg gagtgcgtcc gaatacgaag ctggcagctg tgcacagttg gctatcggac     1980
cggcacgcgg aatccgagtg aatgaatact gcagacatcc gatccggaca tctatgccat     2040
cggagacgcc atcgaatacc acaccctctt accggaaagc cgtggaccaa tttcctggca     2100
gggccggcaa tcggcaaggg cgcatcgtag cggataaatat gcatggacaa acattgggag     2160
ttatgaagga gccataggaa cagctattgc caagattttc gatctacggt tgcagctaca     2220
ggtttgccgg caaaggctct caagcgcgaa ggcctcccta tgagtcagtg acggtacagc     2280
ccaacagcca cgccggctat tatccaatgc ctacccgctt acgcttaaaa tcaccttcca     2340
cccagagagc ggatgctcta cggtgctcag tgtgtaggca tagaaggcgt ggacaagcga     2400
aagactccat cgctcaaatc atcaagcgca                                        2430
```

(2) INFORMATION FOR SEQ ID NO:1386

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 467 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...467

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1386

```
tcggagagag acgttttttcc ttcgaaaaga taactgccat cccccaaaac ttaaagggga      60
gttcttcctc atcgtactcg tccgtaatct cgccgacgtc tcttcccaat atgtcctcca     120
ttgtgatcag tccgcaagtg ccaccgactc atccacaacg atggagacat gcaccttatt     180
ggctctgaac tcctcggcaa atcatctatg cgcttgtttt cggggacaaa atatgcttta     240
cgaatagagg atgccagtcg aattcatcgc ctttatccat gtgtgggatt agattttgat     300
gtaaatcacc cctttgatat tgtcttctga cccctctgaa acggaagtct ggaataaccc     360
gacgaaacaa cgaagtcaag catcttacga aaggccagct cagatccaca tccacaatat     420
cgatacgcgg gaaccatgga ttcgcaggct ggcttattat aggaatt                    467
```

(2) INFORMATION FOR SEQ ID NO:1387

(i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 687 base pairs
    (B) TYPE: nucleic acid
    (C) STRANDEDNESS: double
    (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...687

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1387

```
tctgtcaagc tccttccctg atcaactatc tgcgaaagtc gcataattat ttctcgaatt     60
tcgtctgccc tttgctccgg tcaaagacct tttggccgac tgtccaactg tccatccgaa    120
gtggtattcg tcattcgtca attctatatg agtatgtgga ggaagtacgc aagcacatga    180
gctacgaaga gaaaacgttt tcccttatgt ggaaaaactt ttgggcggaa agttggacaa    240
acgttgcact acagaatcga tatattcagc aaacgccacg atcagataga gctgagattt    300
ccgaacttaa gaacctgctg atcaaatact acccgacatc gagggctacg aactcaacag    360
cgttctgcac gacatattct cctcggaaga cgtttgtcag cacacaactt tgtcgaagac    420
catcttttcg tgcctttgat tgtaaaatag aaaaggaaaa cggattatga atatcatcac    480
actcaaggta cgatagtgga accgctacct atgattcgtg cagggctgga agctctacta    540
agaaaatcac cggctacaag atacaattca tagatgcacc cgccgatatg gttgggtaga    600
tgtaatctcc ttttattgtc ccgatgtcgt tttcatgatc cactcgtatc gggactcacc    660
cgaaacgaat ccgacaaggc atgtccc·                                        687
```

(2) INFORMATION FOR SEQ ID NO:1388

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 552 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...552

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1388

```
caggacctgc caaaagaaaa gtttgccggc aaattatgct cggcaccatc tctcggaaag     60
aagaataggt agtagcaagc ctatagtggg tggagggacg tatatactga tggaaagagg    120
tcgcctattg ctaccgattt ctgatattat tccatttttc ggttgtcttg ataggaaagc    180
```

```
aaatgtccct tttgtgaccg gtcgaaagta aaagatccga tgccacaatg gaagcaccat    240
cagcttgaat agctgtgcga ggaaaagcga ttcgaaggca cgataggaga gttcataccg    300
gtgagttcgc taagctgcga ataagaggct gttacgtagc gttgttaatg gcatcagtta    360
ctgtcatacc ttcgggtgta atccatgcac gcctgccact acgagaggaa aaggcatggc    420
aacgaggcgg ataccacgat tcgaacgagg gtcaattcga tacgtgtatt cacctccttt    480
tgatcgaatc gagaatagct ttgcccgttg cactgaatct gtcctgtcga gggtagtgcc    540
cttgatattg gc                                                        552
```

(2) INFORMATION FOR SEQ ID NO:1389

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 374 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...374

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1389

```
ctcaaaggtg aggggagaat taccgagatc aatgtagccg aaactctcaa gatgtacgtc     60
gtgccctttt ggatgccgac gtgaactatg tcgttgccag cagtttacgg acttggtgaa    120
ggaaaaagcc atcggccaaa acgtgctacc tccgtccgtc cgggcgaact gatggtgaag    180
atcgttcatg acgaatggct gctctgatgg gcggacattc tgtggatatt aatctcaaag    240
gcagtcggca gtaatcctga tgtccggatt gcaaggttcg ggtaagacca cctttccggc    300
aaactggcca atatgctcaa gtccaagcag ggcaaacgac ctcgctcgtt gcctgcgacg    360
tgtatcgccc tgcg                                                      374
```

(2) INFORMATION FOR SEQ ID NO:1390

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1165 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1165

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1390

```
ccaaattctg aatgtgtact cggaaggcgg gaacacacta cntccaatcg gaactgcaaa    60
tccgtactca atagccgtgg ctatgggctc tttctggaga cctgaatgga atgcgcactt   120
atgcgggaga taggatgtgg gctttgtcgg caaacgggaa atgccctatg atttagatcg   180
tgatactaca caaatccttc actggaggag atgactcgct tggctataga gaagctgaat   240
cgttcgagga aggcttttc cttatggtcg agggtagtaa agtggattgg gctgacatgc    300
caacgatcct gtggggattg ctaccgaata tcttgctttc gatgtgcttg tgccgtggca   360
ttcgactttg cccgtcgtga cggacaaacg gcgtcatcat cgtgccggat catggcaata   420
gcggtgtaag cataggcaaa caagtgtgaa agactatgat aagcgttctg caaaagacct   480
tttcgatcaa tctgtcgctt ccgcctgaca gcagacggac ttgcagggcg tttggctgaa   540
ctcccgccga caaggtccag ggtttggtaa gcaatatctg cggattcgat tggacgccaa   600
agagttggaa gctctttata attgtccgga ttataatata gtcctatccc caaagagcag   660
cgcaggcaga cggaagaatc cctctaagcg gttcgctcag taccttcatc gcatcgcttt   720
atacgaagca cacttgatcg gttttacgac gcacggacat actgccgaag aagtattgnt   780
ggcgcctatc accccaaag atacacgccc gatgggaatg gtcataaact atgactgaat   840
gactatctct gccgtctctt cgaattagga agccaattgc cctccttacc gacaagatat   900
ttgctcccca tacggaagta ttccaaggca tagctacagt atcaaagacg gaaagaagga   960
aggagaactg cctgttcttg agtgaaaaaa ggtagccatc gcttactggc gagtcctttc  1020
tccaatacgg tatcttcaat aagaaagcga ttgatctgtc ttccgtagta gtctatgtga  1080
taagactaag actttctatt tgcctcgtga actgcgttct tattcgggaa taagccgctt  1140
gatgtgtgaa gaaaacccat caaag                                        1165
```

(2) INFORMATION FOR SEQ ID NO:1391

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 624 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...624

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1391

```
gtatagcctt gacggacgaa tacgacacga ccgaatgagt cggcgatgag acgatcggca    60
gattggtcgc atcaggcagg ttcgcagcct cccgtatctg gcggcattgc ggccttgaat   120
atccagtccg aatacggctg tctcgggagg gaggggaagt ctgccggttt gtaacgcttg   180
tgtccgtcgg catcgggaag aggaggatca gcttgcgccc ccactgctcg aagtcggctt   240
tcacctctcc aaatctttca gagcatggtt ggtaggctcc tgaccggctc cgagatggcc   300
atcgcgaagt agccgcgtcc tgtggtagag aggagcgagc ggtttctgca tgggagagat   360
cgtggtagag ctgttcggca ttgatggagc cgtcacctga atgtcggtcg aatcgtgtag   420
cagttcgagc ggttggcgag cgtcttaccg gcttctaccg tgaacttcct catccggcac   480
aatacgctgc actggccata cgcgtaccgg taacgaggaa ataatgacct gcattcattc   540
cttggggcgg tcgaagagcg tcttcaggtc agtcggttca ttttcatcta atagagcgtg   600
cggatgatgc ccgaggtgta gctc                                          624
```

(2) INFORMATION FOR SEQ ID NO:1392

(i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 921 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...921

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1392

```
ctttgagatg agatagtatc aggattcaaa gccattccat tccatgagaa gagcttacta      60
cgttgctgcc gccatgagct gtcagccagt ccaattgtcg gaagacagac agagccaacc     120
ctgaccatcg ccatcggcat cgatagtgtc cattccgctg gtgcctctcc atgagtagaa     180
gactcgaacg tttccggaag tctgcgcgct tgccattggc cttgatctca acctcatcaa     240
ggtcgtgtag aacatatccg tgctttggaa gtgacggaaa gcaacatatt tcgtcctgcg     300
ggaaggtcta ccgtcttctg gcgccaagta ccctgtatac gacacgaata gctttcggcg     360
agcgaacacc ttttgccgta atcgtctctt ccacaaagca ttcgtgaagt tggatgcatc     420
gttaccggtc gaagatgcat aaccgcatag tgctcggatg cataattagc atcctgtgcg     480
catacccaga agtcaactta cctccgttag gcaaatccaa tgccggtgtt atcagatagt     540
gtcaggggta agaactccta taccaccaag accgaatgac tctgaataac acaaccattg     600
ctattgtagc cagcgattcc gggagcattt ccaggctcca gccatgcccg tcaccgtctg     660
catcgatcgt cttccatgag gcaggatacc attttcgaat gattcggaaa gtgtagttgt     720
tccgggattc ggattggatt cggatttgga tttggattcg gggtaccatt aggtgcatcc     780
cactaagcgt tactttctgg ccgactgcac taccggtcag gttctgtaca ggacaaattc     840
attggatcct tctaccgtaa cgtctttaca taccttcgga gaacgccggc tgtgtactta     900
acttccacgc aatactcatg a                                               921
```

(2) INFORMATION FOR SEQ ID NO:1393

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 804 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...804

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1393

```
gggaacaaaa cttagatagt gaggattggc aggacactta tttcgagggt ggaagaaact      60
caaaaagctt agaacacgca aggacagtta tcgtgactca ccttcgatat tgtgatggct     120
aacccaccct ttgcgggaga ggtcaagaga gtcgtatact tgccaagtac gatatgagcc     180
gtagtatgtc tctcgaaagg tgaaaatagc ccctaaggga gcaaccatcg tggagggcga     240
gccgactttt ctgaagctct cgctaataca ggagaaacca tctatcagat gagtatggta     300
catatcgaaa gaccaagctc aagcaagctg ggaatatgag ccggacatcc tctttgtaga     360
gcgtaatctt gattttctca agccgggcgg tctatggcta tcgtattacc tcaagggcgt     420
tttaacaaca gcagcgacaa actttgcgcg aatacattgc cgatcgctgt cgcatccttg     480
cagtggtagg ttgcatggca atgtatttaa gcctcataca ggtactaaga cgagcgtacc     540
tttgtgcaaa agtgggacga ggagctatgc ccacgagtag aggattacac atcttctttg     600
ctaccatgca agagccaagc aaggacaata gtggcgaaag atttatcgca gcaccactaa     660
cgaggagggc gagaatgttc ctttgctgac acccacgggc atcttatcgt taagcacgat     720
cttttcaacc acgatgactg accgaagatg gcatagctna agcctttgca gagttcgcta     780
agaagagaga ctctcttttt cgcg                                            804
```

(2) INFORMATION FOR SEQ ID NO:1394

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 629 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...629

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1394

```
gccgatgata gcgtcatcca cacgcaagac gatgggtgga agagcaaagc atccgtcaca      60
cggatgagcg aatgttgcca cacagcatca atgtccatgg tggctgaaag ggtgcattgg     120
ggtggttcat cttcgtcctc ctactttcgc ccagcgagtt cgagggcaag gtcagcgtca     180
atgataatct tacgacgatt tgcgtgaagg cttcggtcta tctttccact ttgcttgata     240
cggttgcggt agggagactg catccgaaga gtcgggcgag tcctgatagt ccgtaacgaa     300
gtgtctttct tctttggcgg gggccttgtc ttgtgtgtct ccccttgttg cgttgatccc     360
tgttgggcta ggaatagtag ttcttcaccc gtatcttcca tacgggcttt tcgaggagtt     420
cgtgtagtgt catagttgct ttacattgcg gtgtcaatcc aattgaatga ggctttatga     480
gccttcgaga tcttcaagca tcgtcttgaa tagctctgac actgcaaaat gtataggcga     540
atgagcacgc ccgaatagcc tangaaaggg aaggatgtat tanggagagt gggaaaacaa     600
gccgagccct ttgggctcca tcaagagct                                       629
```

(2) INFORMATION FOR SEQ ID NO:1395

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 567 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
     (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
     (A) NAME/KEY: misc_feature
     (B) LOCATION 1...567

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1395

```
gctccttacg ctttaatttg gtttgcaaaa atagtaaata tccttagtat cggaaaaata      60
caatcgctcc tctctcgatc tttcctcgcg ggatgagaga aggtagagag aagagcgact     120
gcagcgggaa taatctctgt cgggtgccgc ggcctataat cgagatcttg tatccccggt     180
ccttatagtt ctacttgaag gtccggatat taccgtccgg ataaaaccca cgcacgatga     240
tcaaggaccc gatcggctct gtccggcctc acgaacgatg tcgctgacat cggccccgag     300
cttaccggtt ggcggttgat cgaaaggatg atgaatcctt tctgatacct gcatccttga     360
atttccccga gcttacagag gttacctcta cacataagaa acaccatagg atcgcatttg     420
ttcggcactg agggtctttg atgatgctcc caatacattt ccggtcgatt cgnccggtga     480
ttaccgaagt cttccttcat tgttctttga gcgtgacngt cagttccttg gtcgcttcct     540
acgattgatg gtcagcttca ctttgtc                                        567
```

(2) INFORMATION FOR SEQ ID NO:1396

     (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 915 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...915

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1396

```
aagaggccgt attgggaaga tgaaacggtg tttgcgaaac caaagaagag gccatgctac      60
ctttatgccc tatgctacaa cagcattgtg caggctgaga gcggtatcag aaaccttggc     120
ttactccttc gcaggcagaa tttttattct gaacggcttg tggtattttc gctattttcc     180
cgatgcccgt actgccgtac cgattttgtc gaagatctgt tcgatgtgtc tgcatgggat     240
accatacagt accatcgtgc tggcagatga aaggttggga tacacctta tatacaatgt     300
aaaccacatc tttgaggaca atcctccatt tattcgcatt cagagactta tacctcggca     360
gtggatccca atccgacagg ctcttatcgg cggactttat ccttccgaca ggctgggaaa     420
agaaacgcgt ttatctgcat tcgatggtct ctatagtggg gcttatgtat ggataaacgg     480
gcgttatatc gctacactca aggggggcaat aacgatgccg agttcgatat cagtgcggcg     540
ttcgtgcggg acagaacaat gtgagcatac aagtagtccg ctggacggtg cttcttattt     600
ggagggacag gatatgttcc atatgagcgg attgcatgcg atgtctatct gtacgccacg     660
cctcgtactt ccattcggga tcattaataa cgagcaagtt gcatcccgaa tccgactata     720
ccacagggga aatatcgtag ccgtcgagat ggacaacaga gacggttcgg ctgcacgtaa     780
gacttcggaa tacgtctctt ggatccccaa gggaaagtgc tĉtgggagga acgaagcaaa     840
```

(ii) MOLECULE TYPE: DNA (genomic)

       (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
              (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION 1...1029

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:943

```
catacttctc tcgactatca tctaatttct gatatacata tggcttattc tttaaaaatc      60
tcgtctttga aggggggtggt gtaaaggcat tgcctatacg gggccctcga agtgctgcag     120
gaagaaaaga ttttccccaa aatcaaagag tagccggcac atcggccggt gccatcatgg     180
ctgtgctcat cggactggtt atacaccgag tgagatcaaa gagataatgt ggtgcctcaa     240
tttcagaatt tcatggacga ttcgtggggt atcattcaag atacgaaacg gctgtcgaga     300
agttcggttg gtacaaaggc gatttcttcc gcaattggct tgggacctga tcaaggccaa     360
gaccggcaac agcgaatcga cctttgcgga ttggctgcaa tgaaaggaga aaacaaattt     420·
ctcgacattt ctctcatcgg cccaatcttt ctacaggctt ctcagagatc ttttcggcag     480
aacatacacc cgcatctgta tagccgatgc tgctcgtatc tctatgtcca ttccgctgtt     540
ttcgctgcta agcgcaactt ccgaaacgat gtatatgtgg acggcggttg ctgaacaact     600
atcccgtcaa ggtgtttgat cgtaccaagt atgtaacaag aactttacac gaacgggcta     660
ctatgaacct atcaataaga agctgggaaa cgccccagga agattgccga ttacgtatac     720
aacaaagaaa cattggcttc cgactcgaca gcaaagagaa gatagccttc ttcagggaca     780
acgcgaacct cctcatcgag atatcgacag cttctttgac tataccgtgt cgcattcggc     840
actctgctct ctgctcaaga cgatgtacac ctgcacagtg atactggcaa cgcaccattt     900
acatcgatac gctgggagta aagactacgg atttgccatc agcgatgccc aaaaaaaagc     960
tttgctggaa tccggccgct atacactcag tcatatttgg agtggtacaa taacagcgaa    1020
gaaaaagtc                                                           1029
```

(2) INFORMATION FOR SEQ ID NO:944

        (i) SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 497 base pairs
              (B) TYPE: nucleic acid
              (C) STRANDEDNESS: double
              (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
              (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION 1...497

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:944

```
ccgccggcaa tgctttcttc ccgtctttga tttctcccgg tacgggtata gcgatgtcac      60
tcagtcgcaa ggagtacagc cttacttctc tatcgccaac cgccgatgat gagcgtgatg     120
acagctcttg tcctctcttt cgtactcgcc tgggtttggc cggcatggaa agccgtggca     180
```

```
tgaagggaat gatgcagatt ttcaggagat tatcaccaag ttgatcgcca aggttattat   240
cccatgctgc ccatctatat cttcgggatc tttctgaata tgacccatca gggcaagtgg   300
tgaaggtgtt gtccgtcttc cttagtatca tcggtatcat tttggccttc atatcatcct   360
gctgatcttc caatactctg tggcaggatt caagccaaga agaatccttt cagaatgctg   420
tggcgaatgc tgccggctta ttcaccgctc tcggtacgca gtcttcggca gccactattc   480
                                                                    497
ccgtcacgct aagagtg
```

(2) INFORMATION FOR SEQ ID NO:945

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 953 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...953

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:945

```
ctgaccaatt atattcgccc tacggacttt cgctcgatga ctatttcata accgcgagga    60
ttcgccacgc gatgaatccg gagactatga tttcgaatgc tctacgcttt ggatctgccc   120
cttttcaata aggatctgaa gcagatgtcg ccggtgaaga agtgagcctg cccacctatg   180
acttcgcaac cgggataggg tctacaaagg aaataccata cagctgaaag acggagatat   240
cctgacctcg aaggcattca tgcgctgaat ccggagctga tacccggtgt gcccaatcaa   300
gtacgtataa gatctatgtg agcgctctca ctgcaatagg attgatgctc acaatcggat   360
ccccagtacg gacaaccgac tgatcaggcg atggtgcgcg actatcgcta tcgcaattac   420
tccggtctgg ggacattgcg tgttggcaga gtgtccgacg aggagaggaa aaatgggtat   480
tcccgttcca gagaatgcac acgtcatgtt caatagtgcc atgctctacg agttggctgt   540
ttgcgtgctt acgcggagcc gatcttacag gcaatccctc gtaacgaacg gaatatgctg   600
aagcccgtag actgctacgc tttttgagca gtttccgatg ataccggcac gtttgcttcc   660
gaacaactct ctgatgcgtg agttcccgga ggaagcacat tccactactg atgccgaatc   720
agtccgtaat agcagaacaa accgagactt gggtaacatt tgaagacgcc ggctgagtca   780
tatccggcat attttcagca aaggaaacga cgtaatcggg ctatataacc gactcaattc   840
tcaagaatac gaactnagag cgaaagcctt tttggttcgt aatttgtttg gaccccctga   900
tcgagtgttc cgaatcggac tcgtcgggaa gagctttttt tgctactttt tgc          953
```

(2) INFORMATION FOR SEQ ID NO:946

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2471 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...2471

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:946

```
ggccatcgag agcgttttct cattggcagg agcacgagtg gaattcgacc ctcgtacaac      60
ggctggcaac ctaatatcca gtcgcacatt ctcgaagtat gagcaaagtc ttcgaagagt     120
attacggcca aaagcccgaa gtacagggat gcatgccggt ctggaatgcg gtatcatcca     180
aggcgtaatg ccggattgga catgatctcg gtaggtcccg aactccaatc gccacactct     240
ccggagaaag gattcatatc gaatccgtag ctcgcacatg ggaagtactg gtaaagtact     300
ggagcgagtg taaggagtag aagtcgagtt cggaggtatc tgcatcgttt ttagagatag     360
gtcttacgaa ttaaagaggt gaaacagaac aacggaatca taatcaaaac aataacgaaa     420
cagagatgaa agcatttgta tccccggtca gggagcacag ttcgtaggaa tgggaaaaga     480
cctgtacgaa agaaccccga ggccaaagca tattttgaaa aagccaatga gatattaggt     540
ttcgcattac ggacatcctc ttcaacggca cggcagagga gctgaaacaa ccaaagtgac     600
ccagccggcg atcttcctcc actcggtgat tctggccaga cgatgggcga agacttccgt     660
cccgatatgg tggcaggcca ttcgctggag agttttcggc attggttgca gcaggtgcca     720
tgaccttcga agatgtcttc gtntcgtatc gaaacgtgcc atggccatgc agaaagcatg     780
cgaatacgcc cctcgactat ggcggctgta ctgggtctgc ctgatgaaaa ggtgaagaaa     840
tctgtgccca agtgaccgat gaagttgtcg taccggccaa ctcaactgcc cgggacagat     900
cgttatatcc ggttcggtag aaggagtgga cgagcttgcg aactgctcaa ggaagccgga     960
gccaagcgtg ctcttaagct gctgtcggtg gagcattcca ttcccctctg atggaaccgg    1020
ctcgtgaagg ctggcaaaag ccatcgagga gactacgatc agtcagccga tctgcccctc    1080
tatcagaacg taacggcttc tgccgtcacc gatccggcag agattaaaag aacctgatag    1140
cacagctgac ggcaccggtt cgctggacac agagtggctg aatatgacag ccgatggtgc    1200
cgaccacttt atggagttag gccccgaaat gtattgcagg gtttggtgaa gaaaattgct    1260
cctgaagcga caacgaagga cgtcagtaat caggtcttaa gaccctctaa gagaaacggt    1320
gtacgagatc gcccaaacag cgactccggc acaccgcttt ttttattgct cgaggcttat    1380
acgactacct ttttctccgg aggcttcttg tcatacgtct tgagaagata gacggttcgg    1440
gtctattcgg aagaggaagg cggaggatta ttcctcctgc gggactttcg cttggcactg    1500
tacttgctct ttttcttggg ccggaagccg aacttttagt gatttgcagc ctctgaccgg    1560
gcttgacgag gaggacttca agccgtttgc cctcttaatg gctgctaccg tagtgcctaa    1620
cgtttggcga tggacaagag cgtctcacct tgcttgacat tatggagatg gcggttcgtc    1680
ccgatcctcc cgagtgttgt ccgccttgct cagggaatcc gataccgaag cctccaagtc    1740
gggggaataa agcgaatcgc gaacttgtcc aatttcttga tggaagcgac gggaaggcgt    1800
agtcggcaca gctggtatta ccggggatga tccccctttt gtattgaggg ttgagcagtt    1860
gcattcgtcg ttgctcacac cggacaatag acgaatgcga tcgaaagata ctgtcgggac    1920
agcataatcg tatccgtagc caaaggaacg ccggtctctc ggcacagatc tcatgttcga    1980
tatggtagtg catggcatag tacgcaccgt gaagagcggg atgtagttcc gcgtttcgcg    2040
aggaaggtag ggatagattc ccagaagtcg gtcttgccac cggacattcg gatggctttg    2100
ttcacatgcc gagtccgcag ttataagccg cgatgcagag gagccagtcg cgatagggtc    2160
gtacatgtcc ttgaagtagc ggcaggcagc ctctgtactt ttctgagatc cagccgttcg    2220
tcgacgaggc tgtttatagt gagtccgtat atctgcccgt agccagcatg aactgccaga    2280
taccggctgc tccggccggc gatctgccgt agggttgaga gccgactcca cgatggtcag    2340
gtacttcagc tcatcgggag gttatgacgg tcgagtgtct cttcgatctg agggaaatac    2400
agtcggcgag cgagagcata tagcggacaa ggcgacgacg ttcctcggtg agagcttgat    2460
gcactgcttg a                                                         2471
```

(2) INFORMATION FOR SEQ ID NO:947

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 333 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
               (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
               (A) NAME/KEY: misc_feature
               (B) LOCATION 1...333

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:947

```
actgcccgga gccatgatcg cccttcgaaa gtgaagggcg gttgcgaagc ggtaagaagc    60
tgatgaacaa cctgcacctc tgctccctcg ccgtgagctg ggcgatacgg aaaccctcat   120
ccagcatccg gccagcatga cccactcccc tacacacccg aagagcgtgc tgccagcgac   180
atatccgaag gactggacgc ctgtccgtgg gtctggagaa cgtggaggac atcatcgccg   240
acctcagcac ggtctggaca gctgatctaa acacccaagc tgataaggct gacaaagaca   300
tatgaacccc gaaagtcgcg acgacttcgg gtc                                333
```


(2) INFORMATION FOR SEQ ID NO:948

        (i) SEQUENCE CHARACTERISTICS:
               (A) LENGTH: 1444 base pairs
               (B) TYPE: nucleic acid
               (C) STRANDEDNESS: double
               (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
               (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
               (A) NAME/KEY: misc_feature
               (B) LOCATION 1...1444

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:948

```
agatgtcttc caacgattat ctgacggact atgtgatgac gatgctggtc gtctctccgg    60
ctcttaccgc tgcaccggag cataaggagt ttcagccgtg aagcgtatgg ggtggaatgc   120
tctcgatgat gctgcctcac gactgatgat agaatgaagg aatacgaaaa gaaanccaag   180
agtaagtaca aaatacgccg gaacgagcac tcaactatct ctatctgctt acgatcgaca   240
gtcgcaccca agctctcgtg gccatgctgc ccgcatgtat ttcctcgata ttctggccga   300
tcccttccgc atatttccat tttggatatg ccgcgagctg ccacgtactc cacggtgtag   360
ggcgtaaggc actggccgat gatttcctcc gtctatccgt gagcatatca tccgcacacc   420
ggatcagggt gcgcactttg cctgccttca ggcggatatt attggtgcga ccgtcgctat   480
ggtatgcaga ggaagcgatc gaggccttcg ctcgtatcgg tacgtctcag gacagctcta   540
tatcgaaggc ttgcagatgt ggctcctcaa tcagaaaaga actcagcttg gccgagtctg   600
ccggcttctt ccgatgcgat atatgctctc ttgttagtgc aggaaaagat cgaatggtag   660
aagccactgt gtctgtccgg gctccttacc tgccttgtca ggtacatttg ccggtgcagg   720
cgaaagtcgg atcgtacggt ggaagatctt ccgcaaggca aactaagtgc agagcttgct   780
cgttcggaaa aggatttgct tgggcttcct tcttggcgga atacgatgcg ccgcggcgga   840
tctcgtagct acgggtaatg gcttgtcggt agagaagcat ctttctccga gcaggtgata   900
gatggcaagc taacgctcgt acctctccga ggggcgatcg gctggaagtc ggtaaacggc   960
```

```
tcgtgacgca actgaccatt cgctcgatcg cgatatggac ttcattgtcc tgacggacaa    1020
gcgaacggcg cggtggaacc tatcggccaa ctttcgggtt atgattatgc agccggaagt    1080
tctactacag agaaataaag gatagcagta cgcgtttcta tttcgatgtc tggtaagagg    1140
atcctacaag ctccaatact ccaccgttgt ggttcgtcgg gagcttatgc ctcaggtatc    1200
gctaccgtga gcagtgccta tgcacggagt ttaccggtca taccgatggc ggcagacagc    1260
tgcaaacagt tccgtcgcaa atactcaata aactaaagaa gcaaatgaac caacaaccaa    1320
tcaaatcgcc gtattcggac tcggtggagt aggtggctac tacggagcca tgttgctctc    1380
cgcgcagctg cgacggatgg cctcctcgaa gtttcttgga tgcgcgcgga gcacatttgg    1440
aagc                                                                 1444
```

(2) INFORMATION FOR SEQ ID NO:949

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1068 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1068

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:949

```
gttctgggac ggaatggccg atatggatgg acatggagtg tttacgaagt gcttgacgat      60
cgcaatcgcg ccggcaactt tgtgctgaac atgggtttca tcaggatgca tcaggccttt     120
tggcgtttta cgacaaggct ctttacgacg cttcgctatt ccggcgggca tgactgtcgc     180
tgccgagctg aagatcgacg aggagtgtac agcggtcaag taaagctgac agagcgttcc     240
ggcaggtccg tatcgatggc gactatctga tgggtacgga taagtatcgg ctcgtatgca     300
ggtggacggt ctgaatttca gtgccttcat gccgaaggat agttcggttc catgcaggca     360
gtgcttcatg ccgaagggcg tggattcgat ctttcaataa acgtactgtc tccaccatac     420
acacatcggt caaacacatc cttggaaaga acgagatttg gacagtatca ctttcgatgc     480
ggcattgaac aaggagtgct cttcgcttca ttcaatagca ccaactcctt cctgaacgga     540
gtatgcaatt ggatgccctc cttggcaaaa acaaactgga cggctctgga tggtgcggat     600
ggattcggcg gatttcaatg cattgggctt tgcagaccca cttttgcggc agcttttgtc     660
cttgagggtc atgtgaaaag cgatttgctc agacacatcg gttcgaagcc tcggtacgcg     720
attgttacat gcagccgaac gctataaagt aataccggag cgaatagata tattagccga     780
taccatcccg atagcatccg tctggatctc gtgtcgggcg acttgaaaat ggcctcagag     840
tgggagaagg catagatgcc gttacggtcg tgtcccaatc tccgggaaga agatagagat     900
attccgcaac gactctattc agcgtctgcg atctcttcga tttttcaaga gctgcctcat     960
gcgaccttta ccttgcaagc cgatcgctac aatccgctcc acgacttgat gggaagtaaa    1020
cggtatgaat acaactccat ccgtggcaag ctggacagtt tcgcccga                 1068
```

(2) INFORMATION FOR SEQ ID NO:950

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 594 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...594

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:950

```
actctagagg atccccgatt ccatttcctt caacaaccag aacatatgtc ccggagcctg      60
agaatacaca tccatactga agacactcgt ccctgctata attccttggt cattgcagcg     120
acttcttctc ctgcggtgtt ataaagctta tccgatatgt gccggcaata ttcaaactta     180
ccgaaacagc cagttcgaac gaccggcgtt gaaccatgca cgaagagctt tggcagctcc     240
ggtcaagtac atgtattggt ttcgttcata cacgtaaact tgaaaggatc aggtcgccga     300
taaagggata agtctctttg cgaaccacta ttgtcagcgg caggatatag tattctacct     360
tatcattctt gttaagacct gtaaagctat aatatagtga cctgttgatt ccatcgtcat     420
atcagcagcc ttaaagctac cgaaccattg atacgatagt aacattgtac cggcgagata     480
gtagcattgg gcatgagacg acatctgctt cgatcttata atcagggcct gcctgttcgc     540
cagtatcggg tagtgcttga tatagagata gcccttatcc gctacctctg agta          594
```


(2) INFORMATION FOR SEQ ID NO:951

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 526 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...526

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:951

```
cgggacagga ctctatctcc tttcggaaga ttgcagtaag atcctcgcga atttaccgta      60
gaaaacagcc ctttgctttc taacaacata ctatccctgc cttaaatgac gataacggac     120
tgctgtacat cggtacggcg gacggacgat gacgttccaa acgggtacgg ggagtggatc     180
agcttccgaa ctggacgcgt ctatgtatac cccaatccgc taaggccgga atatcccgat     240
ggcgtaccat tgccggactg caagccggct gtagtgtcaa aatcaccgat accacggcag     300
actgctatac cagactgaga gcgtaaccac cgaagtcaaa tggatgctcg aggtgccgat     360
ggcaataggg tagcttcggg cgtatatgcc gtgcagtgta cgatccggta tcgaaaaagt     420
ccaaactaat tcgcttcgca ggattcgctt gacacacggc cttttctctc gtaaacaaca     480
ttttaatcca actaataggt aatgaacaaa aagatttttg gtgcat                   526
```


(2) INFORMATION FOR SEQ ID NO:952

(i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1274 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1274

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:952

```
ttgaagatta tccggttatt gtaatgagca catctcaaca ccacgagctt aaatcgggtc      60
aatatgccca tccaaaacga aagaactctc gccttggcta tccacatccc aagaacttcc     120
ttatagccct gtcgttaagt cctacgctag ataaaccgtt ttcttgatta tcttgcctga     180
ttctcttact ttgaattaga caaccatata acgcctgtca agaggagaat tttgccattc     240
aagggagatt ggattacttt attagtaata atggatatgg cactcgtaga aaggttattt     300
cgtatatatc acaaaactta tcttctatat ctgatatatc tgaacgctca tttgtttgac     360
atagagtgag attacatgct tttcaatata aatttccaac tgttcatctt cgccatgtac     420
aggatgctat cctcctcgga tactacggga gctccgttgc catatcgggt tttcagaggc     480
tatacctcat gcctttaggc tcctcgactt aggcaatccc catttagctt gcataatctt     540
tagtgcgaca aactgtcgga tgcgacgttc gaccttttgt tcaatccgca gactacaccg     600
gaaagtacta cggagtggcg tttgtaattg cctcccgcac ggctcattta acagcctctg     660
gactatcgtt caaccaattc aggcttatcc ttgtgcttgt ctttctacct cgtcattcag     720
tcgccacttg gcaatagtgg acttatgcct ttactgacat gctacactcc cattgggttt     780
ccccttggat aagtggttga tagtaggtta cttcaaagaa cacgaaccta atcatagcta     840
aggagatatt tattgtgctg ccttatgggt gctctttcca aaatgatttc aggtttattg     900
tcgtaaaaac agtatgccac tatagctgag acggattcat gatgaagtta ttgattgatc     960
gatgtcttga gtgtacaagt tgccggtgtt tttcagcata tcattgatgc attctatgat    1020
gtatctttttt caacatgatt ctgtcacacg agggcataag tttgttcttc atatttgctt    1080
gattccggtt acaagatgga tgccgtcatc aaagaggctt tcaaagattt aggcgagaat    1140
atcccttatc tgcaaagagt tttccgtata gttcttagcc ggaacctgcc aaaccttcgg    1200
gtttctgnca tccacgttag caccttaaga caaaacgtaa taaactcttt acgatcattg    1260
catacgaaat caag                                                      1274
```

(2) INFORMATION FOR SEQ ID NO:953

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1057 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1057

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:953

```
cgtcctactc aaagctactt atctgcttgc cgccggcaac ctctaccgct gacctataaa     60
atatatcccg atggtgtggt gaaatgtgaa aggtgcaatc tcttcgacag atatggagac    120
cgacgaatac gaatggtccg aagctgccga accgctacat tctcccccgg cagagaagct    180
ctgcgcaagg aagctttatc ctcgaagtgc ctcgtatagg tgtacgcttc cgccttcctg    240
cggagtgaat gaggtacgat acttcggaag agggccggat gagaactata tcgacgcaac    300
tacggggcga ctgtcggtct gtacaccact gctgccgata agagtactac aactatgtgc    360
gtccgcaaga gaacgggcat cgtaccgata cggttggctg atgctgcacg gacgaggctt    420
gggcttgggc atagtagccg agaaacgatc ggcttcaatg ctcttcgaca agctgtcgag    480
gacttcgact agaagaagcc aagcacagac cctaccagtg gaacaactat tcacagacca    540
gatacaaaac cgagatgaga gcaaagctcg caacgtcctc cgtcggcaca tcatgtcaat    600
gatgtgcctg tgcgcgactt cgtagaggtg tgcgtggtat gaaacaacaa ggagtaggag    660
gatacgatag ctggtcggct cttcccaacc ttggcaccgc ctaccgtcca atcgggaata    720
cagttggggc tttaccttct tccggtacga tcagtcggcc aaatggccac tgccacccga    780
tacgactact aagcacaggg cgatagatgt ggcaaacacc atgaggtgcc aacacactca    840
tatatcttat acggataaaa tacagcataa cgcatgaagc aatgaatgaa atagtagcac    900
atttccacac cgagggaagc gtggcagaga tgcaccctta ggtgccggtc ttatcaatga    960
cacttacaag gtggcaacag cgaagccgat gcacctgact acgttttgca acgaatcaat   1020
cacaccatat caaagatgtg gaaatgctac aggccaa                            1057
```


(2) INFORMATION FOR SEQ ID NO:954

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 995 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...995

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:954

```
gagactgtcc gccgaatcaa acggatcagt cgtgagatag caaaagctcg aaaatatcag     60
gccccttcaa tatccagttc cttgccaagg gtaacgattt aaggtgatcg agtgcaattt    120
gcgtgcttcg cgcagcttcc ccttcgtagc aaggtgctca agatcaactt tatcgaattg    180
gccacacgta tcatgccggc ctgccggtag agaagccgaa caagagcgag ttcgatctgg    240
actattcggt atcaaggcct cgcagttctc cttcacccgc ttgcaaaagg ccgacctgtc    300
ttgggtgtgg atatgaccag taccggagag gtaggctgta tagggatgat acggacgagg    360
ctgtactgaa gagtatgctt tcggtaggct atgcattcct cagaagagtg tactcttatc    420
taccggaggc tataagcaaa agtggatatg cttgatgcta cgaccatgct tgcagccaaa    480
gggtataaga ctatgccacg gagggaacgc acaattttct cagagagaac ggaatcgaac    540
gaccaaagtg ttctggccga gcgagaacgg acagcctcaa gctctggatt gcttcacaat    600
cgtgagatcg agcttgtggt caatatcaac aagaatctac cgcaggagaa ctgaccaatg    660
gttataaact ccgccgtgca gccatcacct gaatatcccg ctggttacaa atgctcgttt    720
```

```
ggcttctgcc ttcatacggc attctgcaaa catagccctg aggatattcg catcaagagt        780
tgggtgaata caagtagtcg ctttttcttg ttgagagtgt cgattgtaaa ttcagagagc        840
ctctgtaaat ccggtcataa ggccgactgc acttgcagca tttcttctct ctctcctcac        900
ttccatggag ggaaaaaaga cggaggcagt gntttagtat ttggacactg cctctgtctt        960
tttcgagcgg attaccctcc aaagatcaat cccgt                                   995
```

(2) INFORMATION FOR SEQ ID NO:955

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1245 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1245

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:955

```
acgccggcta cactgatagc ctgctcgtcg agtattttgt aataagttct gtttgggcat         60
tgagccggca ttggcaatac ccagctcgcc ggctatagag cgagttcagc ttcagccttt        120
tcgttcaaat cgacgatcgt gtacttcgca taataaatga tgatgagctt tttagaaata        180
tgataagtgt tgataggggga tacggcatct cggaatgaga ctgtcaggat actcgatacc        240
gcaggcgaaa ggatagagaa taggtgtcta tttcgttttc cgtcgtgcaa atgtagaaat        300
aaatcgaatg atggtcttac tccctccgcc ttattcgccg aggcggctgc gcctgcggat        360
gctacggccc acgggggcga tgcggagagt cgtcgcaaag agcgggacgc cgccccctt        420
cgtctccata aacgacacga cagagtattt attttactgt ctgccgaatc gaactatttg        480
ggtacctttg cgcggtttgc agaccgcccc cgcaagtcgt ggccgccccc tcggtcagcg        540
cgtgcgggag gagccgacgc acctcacggg aggaaggccg agagcctccc cgggaaacgc        600
cgggacgtgg ccgtggccgt ctgcaatatc ccctcgaaaa acgtctagac gttttgcccg        660
aaacgtctag accttttgct cgaaactcta gacgttttat tcggaacgtc tagacgtttt        720
cctccgaacg tccagcgttt tttttcggag gacttgaggg atgtatcggg tatgagtggt        780
catcaataac aagaaactaa taataagcaa gttatgtccc taaagtatgt gataaaaagt        840
ctgtcgccaa gatcggcccc aaagccggac agaccatcta tttgcccagc cggcggcaca        900
agactctgta accttccaca gcctctgcaa ggaatagccg aggagtcggc tctgacctcc        960
gccgacgtca aaggcatcct gaccgcctcg tcaatatcct cagcgaggag ctgcccaacg       1020
gcaagacggt cgcatcggcg agctgggcag cttccgcctc tcgttcggtt ccaaacaatg       1080
gacgacccca agaatttctc tgtagatcag atccagaagc acaggctgtc ttcatcccct       1140
cggcagagct caagagcatc cccgcacgcg gcaagcccgc ccggggtctt cagccctggc       1200
cttcgactac gacgtgtgga gccgagccta agaagaaacc cggac                       1245
```

(2) INFORMATION FOR SEQ ID NO:956

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 618 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
              (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION 1...618

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:956

```
ggtctgtgtc caaataaata tcgttggcga tataaggttc atcggccgga gctgctgttc      60
gatgacgggg tggcggcccg ctttgatgtc gatggtaagc tctcgtccac tacagggcag     120
ataaatctgt agcggcgtgc cgactcgcaa aggagaggag acaatccaga gaagccaccg     180
cttgactgtc ctgttgagag gtgccacgta tcgctgcagt tcggctacaa gcaaggcgta     240
cagcttcctt cgagggctgc tattttctct tcggctccga gtattttgc ttcgactctt      300
tcagctcttc cgtaatatac cgttcggcac tgacgagtgt ttgttgcgga tccactcggc     360
cggtaccttg tccttgtgcg tgttgcggac ttgatatagt agccgaacac attgttataa     420
gctactttga gactgggtat tccgttcgct ctatctcctg ctgctgtagc ttgatcagat     480
agtctttgcc ctgtatgcca gtgcacgcag ttcgtcgagc gtggcatcga cgccatgtgg     540
atgacggngc cgcgaccgag agcggccgga gcatcgggca tcacctcagc aatatcttgt     600
cgcgtagttc cttgcaca                                                    618
```


(2) INFORMATION FOR SEQ ID NO:957

        (i) SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 566 base pairs
              (B) TYPE: nucleic acid
              (C) STRANDEDNESS: double
              (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
              (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION 1...566

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:957

```
gaagtgccgg gtacggagcc gcgcgactgt ggcaactgcc tgctgcacac ctgccgatgg      60
ccaaatatga ggccgagaaa tacctgcgtg aggtactcat gtagcgacgg aggagaacct     120
gaactatccc gactgacaac tgccgggtgt gcatggggct tacagtccgc tctatttctc     180
acgtctgcat ctctaccctc atgtcttctg caatgacata ggcaggacaa tcgcatttca     240
gccacaacgt acatctaaag ctcatgattg ctacattcaa ttttcaaaac aagtcgaatc     300
catatgtcag agattcaaat catagaggaa agagactaaa aatttcaaac gcgatcgccc     360
tgacaggctg cccccggggc cgatgcatta aatggttttg cggcttcatt cgagcaaatt     420
tctcctcatt ggtattattg gtgctattgt gtgccgatgg cagccggatg gattattgga     480
gccggaggcg tatcggctcg tatggacgca atgtgaatca gacggcacag cgtggcgcaa     540
aggtgcatac acggggagca aggcga                                          566
```

(2) INFORMATION FOR SEQ ID NO:958

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 445 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...445

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:958

```
ggcaaagtcg cacgtggcag taatccaaat gggcatatgc ttataattga tttgtgtata      60
tcgttgagcg tcagcaaatg ctcgtccgac catccggcgg accgccatga ccagcataat     120
taagcaggat aatacccgac tgaagggttc cagcatcttt ttctttgcac ccggaatgct     180
gtgcaacccg ttctcgtgac atgcggatat acgtcctgaa aggcgcgtac cggcatgatg     240
gcagggcata acgcttgacg gtatcgatca aacgggaagt ctcggttgcg tgctgtcccc     300
gttgtctgcc gcaaaacagg cacgaatacg ccaggcacca ctcctcgatc ctcctcatat     360
cggatggtct tgtccactgc gatgcgagct tcgccggagt acgtacgggg aatcgcccta     420
cagccatatt ataatgcgcc accga                                          445
```

(2) INFORMATION FOR SEQ ID NO:959

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 525 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...525

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:959

```
ctcggtcgcg ctcctgtggc caacctgtgt ggcatccgcg gtgctgtatg tcggaatggc      60
tgatgaacgg gctgttcgga ttcggaacgc tcttcctctt ttctgcgttt tttcgctatc     120
gctcaagctt atgggtgtcg tcaaacgata tctgtcgtga aacggctgat attctgcggt     180
gtgatgacct tttggagagc cttgcagctg cattcatcta caaactttca ggtctcgaag     240
gttttttcgt tggggcggta tgcacggtca agaatggaca ctgtttctcg aacgaatata     300
ggtaaggccg gactgatcat agttctgctc gtccttgccg ttacatagcg gtagtggtac     360
```

```
gcagcgaatg tatgggtttc ttccgccgtt tgtgggacta agctggatct ctattcccaa        420
actgccgaag aaagagagga aaataatcat gacgagtccg aaaacgagtc gctcggcaat        480
ggctacgaca gggtgaaagc gagaatctct ccggctatct caaca                       525
```

(2) INFORMATION FOR SEQ ID NO:960

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 486 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...486

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:960

```
gctaagctca tcatctcctc gtttgccccc atgaaaagca gaatttctgt agaaacgcat         60
tgcatacaag ggcaatgaga gcagctaaaa tcacagagtg atcactgaga cggaagctac        120
ctgaccagcc ttgacaattt gcttcgcccc aataagcgag atatatacac tccgcccca         180
acaccaaaca tcagcctatc ccaagaaaca ccaacgataa agggaaaaca actgatncgg        240
cagcgcagga agagttccca aacgtgcaac ccagaaagta tctaccacat tgtaattgcc        300
ataatcagca ttgcgatgac aataggtatc cccaactttg tcaggatttc atcatacttc        360
cttcttgcaa aatattacag cgttgttcat cctataatct gtatcttctt aagtaaataa        420
attctgctgc aaaggtacag gggatacagg gtcgtcacaa tagacaaaca acggtgataa        480
tagcac                                                                   486
```

(2) INFORMATION FOR SEQ ID NO:961

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1598 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1598

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:961

```
tccccggccg atgccgctct gaaatacgat aaggaataca actgattgaa aaggcaaaga        60
aggagcttcg acaagactgt ggagcatttc ttacaatagt atggcagcac cgcctctata       120
gctcgttaag ctatggggcg gatgcttctt tttggagcct gaggtcattg atccgggggat      180
gctcaatcgg gatagtgccc cgatttcttc aacgccaagg tgaaagtggg cgatctcctc       240
tgggcggcaa cgtagagatt cattgcaggg cttcggattg ggtccgtcac gggctcatct       300
cgatccggct tatgacaatg tagtactcca tgtggtagag acgatgacct cccgatacgg       360
caccgaatca gcggtgaacc tgtccccgtt tggttatgca tgtagacgaa cggcttaggg       420
caaacgccga ctttatgctc cgacgtccct tttgccgggt tgtaaggaca ggctccatga       480
acttgatagc tcgaagtcca cgactggctg gacacgctcg tcgtagaacg attggagcga       540
aggctgccga agtggatcgg ctctatctgt ctacgtccat ggattggatg caacggccta       600
tatcctgtta gctcgtcatt tcggattcgg gctgaacacg atgccctcga gcggcttgct       660
cgcagcctgc cctttgccgc catcgcaagc atcggagcaa tctcctgcaa gtggaagccc       720
tcctgctcgg gcaggcggtt tgttggccga ccttgaggat gaatatgccg agaagttggc       780
ttcgaatacg ctttttttgag acataagttc gacctgcagc ctcttgatcc ctcctctttc      840
gtctgcatcg cgcccgtcct gcctctttcg tacatcgtcg atgggacagt tggccgccat       900
tctgcatcgc tgcgagttcc tgttttcttc tttgtggaga ctgtgtccgc taaagaactg       960
gcacagaagc tcagcgtgga gcatcgtctt actgggcttc gcattatcgc tttgggaagc      1020
ccacccctgt ccttcccgta gtacgcttgc cgctatttcg tcggatgccc tgctgatcat      1080
gtagcagccc cacttcgcta tgcttggttg agggggcaga gcatggagac taccgcgagc      1140
ggacaataga cttcctgcgt ggcatcaaac ccgaaacaac aagccggttc gtgctttctc      1200
ccagatctgc cgacctgcgg atgctccgaa agccaagccc tcattcagct ctatcgcgaa      1260
tactgcgagc gacgaaatgc ttcttttgtc gctggggcta tcgcttgctg agctgctgca      1320
aaggtaaggg tgcatcggtt tcgggaagaa gtccgaggcc aaacacttcg tctttactac      1380
cggtccgtca atagggaata tgtaaggcgg cttactgtct ccaagaggcc tcccacttga      1440
ttttatcgct ttatcatagc gaattgcatc cattgcaaat acgtttttat agatgctgtc      1500
tattagagca tagatgaaaa cttgattgtt tttgtaattt tgaaacgttt tcagagcatg      1560
taactaacac gatttatcac aacacaagaa ttatgtca                              1598
```

(2) INFORMATION FOR SEQ ID NO:962

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 492 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...492

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:962

```
cgcgaatcgg agggtaagat gcaggagtcc atcaaccacg ctgagggagg gagcaggcca        60
agattctcag agccaaagct gaggcagagg ctaagatatg gtggccaagg cagaggccga       120
agctatccgc cagatcagcg aagcagtgcc ggtagtggtg ccaatccgac ccaatacctc       180
attgccatgc agtatacgaa acgctcaagg acatcaacaa gggcgatcag accaagaccg       240
tttactcccg ttcgaggcta ccggtatgct cggtgccttg ggcggtatga aggattggtg       300
aaaggatgag actctctgcc attcttatcg ctttgattgt gatctgcctg ctgtgcttag       360
cgggcagcat tattattcca tggcgggaga gcactggaga cggacagcat tcgtccgaac       420
gaactctcgg catcgatccg agtgcgcttt tctttcggaa caatgaatac caatgcacgt       480
tcggtcaaaa gt                                                           492
```

(2) INFORMATION FOR SEQ ID NO:963

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1779 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1779

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:963

```
gtaagtcagc caagcaggct ataatgatcc cgaatggtac cgccgtggct gccaaagcca      60
ccttcccaag tgacgaatat cttggccgga ttggccaata gtatgccggg tcatagaata     120
ggacatgtcc caaacgcgct ccgacgatag tacctacaaa agacatagac ggccagggac     180
tcgaaccatt tggaatcagc ttctcgtgtt cccacatttt tttctctatc caagggccca     240
gaatgtcagc cccaatgcaa aagagcaaac cgtaccagac aataggggtgc ccgagagggt     300
aaatagaacc ggatcgaaat cccatgtgat gaatgcaggt agttcataat gttccgatta     360
accgtttagt tgagtaatct ttttcaacaa agtttcctat ccactgctcc ctgtctccgg     420
ggagaaggtc tatgacgggg attcctgtaa ggtgtaagct ccgggttgtt ggcgcatggc     480
tgctcgagct cacagaccag tacttgtccg gtgagagcgg ggttgtttat ctccatgtca     540
atgacattcg ctggttttgt gtggagccgc ttacaccctt acgcaccagc ggacgccatg     600
ccccatatcg atgagggcat ccacttcatc tacctgttca cgtgggtttc gtcatgaacg     660
aaatactcgt ctgctttgat ggcagcgata cctcctccaa gttgtgtccc ggaagcagtt     720
ctacgtaaac catgcacgat gtacacccgt tccgagagga atggtcatag aaagtgcggc     780
cttgcaccgt ctatggcttt tacggctacg gtgtgcccca tgctcatgcc cggccgaagt     840
tcgtgtaggt gatccctttg ggtacgatag cctgcatcag tggcgcacta cagagtcgct     900
gcccggatcc cagcctgaag cgatgacggc tccgccccac tttttccggc ggcgtctccc     960
aacgatcgac gcaaggccaa ataccgtcgt ggatgtcgaa actgtcagca gtgcatattc    1020
cctttttcat atctccaagg ctgttcgctc tacttcacga cttggtgagc aaaccaagcc    1080
acatcgaccg attcgagttg ctcgatgtcg gatactacac ggaaaggtgg agctcgaagg    1140
gaacctcggc cggattgcgg cggacaatgc cggctattca aaatctggag cttctctaag    1200
cgcttgcaag gcataccgac cgatatgccg tagcctacga tggctgcccg aatctttttg    1260
tcgtctgtca tttgcaaatc tggggggatag ctgttttgcc cctgctctta tttgagtagt    1320
ttgctttctc tctgagactt ttgaccacag catccagcaa cccgtttacg aagttccgct    1380
cttgggtgta ctgaacagct tggagaggtc gatgtattca tgatcgttac caagaccgga    1440
atattcggga agtggagcag ctcggcgata ccagttgcat gatcagcata tccatgtccg    1500
ctatgcgatc cacttcccat tgatcagatt ttcacggatg atatggcgat attcctgtcc    1560
gttgatgagg cattgcgcag tagggtggtg ccgaatacgg catcgtcttt ctccttgatg    1620
caggaagcag gatagccgat ggatcggtgt cttgctcgat ccgtcgattg tcttgaggac    1680
gaactccttc acgatttcga taggtgcatt ttccttagga tcgtttggta gttgccatcg    1740
gcaactgctt gtcgtaccga catgtccacc tcctctatg                           1779
```

(2) INFORMATION FOR SEQ ID NO:964

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1037 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double

(D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1037

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:964

cgcgaaaatt ttttcgttgt ggcgcgagaa gtaaaaattt ttggaaccaa acgaaaaatt   60
tctcgcgcgt gttttcgcca aaacacgcac cgcaatccac cgtttttggc tcgtaatctt   120
ccgacagtag gaagctcttt tcatcggtcg tgtagctcct tgtgagaaaa taaagatatg   180
cccgaaaggg aaataaattc ggatttatta ccggttacgg cgcggaatac tctcttctct   240
ttatttcttt gccggaagcc tgaccttttt tatccttgca ggcaatccta atgagaagat   300
actaccacac gttaccaacg aaacggctcc cttgcgcact gtctactggg gttgccggat   360
tcgaccggcg gagcacctgc tctcgccgac actacgatgc caagagttat gaatccgtgt   420
tacggggcac ttatccttcg gcgaggatat caagatagaa atggatgccg tactcgatgt   480
actggtgcgt atggcataga ggtgctccgt cccgagccga tagcaaacta caaccagatt   540
ttgcccgcga tgtggctttt gccatcgatg acaaactctt cgtatcgacc tgatagccga   600
tcgtgcccgc gagtccgaag ccttttcgcc catttggatt gtgtcggaga gagccatctg   660
gtacgcctta gcgaagatat tcatgcgaag gcggagacat cctgttatat gacgatattc   720
ttttcatagg cacctccttc agaaggatta tccttccttc aagacggccc gaaccaatgc   780
acggctgtag acttcttccg cgaatttttc ccacacaaga ccatcatacc gatgagctga   840
tcaagcacga caccgatccc atgcgctcgg tgctccacct cgctgcgctt tccaacccgt   900
aggccgcagc cgcgccatag tctaccgcca agattcctgc actctgagag cttcggcctg   960
atcacagaga tatcggtggc gggacaacct gttcgagatt acacccgagg aagctatatg   1020
atgaatacca tatattc   1037

  (2) INFORMATION FOR SEQ ID NO:965

       (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 1677 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1677

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:965

catagtatga aatttatcat aattagttgc tacagcagac gacgcacaat ggaagataca   60
tttactttaa gagctgctcc ataggcattt ttttactgaa tattgaaagt gcgccttttc   120

```
gttgtctgca agttgatact tatagattta tattcaccct gtgaagtcac atctgtatga      180
tttatttcct cgaaagcatg gttgtaccta acgaactatg gttacggtga ttgctatact      240
ccacctattc agcgtgtagg acttcggtac tttcagatag atatttctaa tcttacacca      300
ggacgatatt cattggcata ttcaaatgca ccagagccga aacacgggcg tagtggttag      360
caacgcgtcc cagatctgtt ggagtacatt gtaaatgaca tgtggatcgg taccgtttac      420
aacaaaagta cccatgatgt aatctcgggc acaagtatga gacaagttaa cggattggct      480
tcatcccata cggtgacaca ttggcggtag agttgtagaa gaaccactcc ctaccgactg      540
cgtatctact ctatgagcat tctgggatgt tacccgataa cgggtaacac atccactttg      600
tctctatcaa gcaatccacc agcaggaagg attgaagaaa atcccagtcg atcacctgct      660
ctgcattatt atttcggcgt attgaaggaa tgtcgtatat ccatctaccg atacaatctg      720
aaccccatca cggaaatctt aatatcggcc gaaagaggag taagcgtttc tactcgatcg      780
acaccgtagc caaaacaaaa cgggcgccca aagacgaagc agtaccatgc tggtagaagt      840
cgctgtaatg ttgacttcgt ccatatatag ggctttagcc aatcgtaagc cgatatattg      900
ctacgagatt gacgggtccg catcgtataa tcgtccagcc caacgaattg tcggcacgtt      960
ctatcttagg caccgaagtt ccgcacctct accgcaggga ggatcgcagc ccaaaacata     1020
acgctttgcg tgttacacat aataggacct accgggcaaa gacaatcagg gaagtgaagt     1080
agttgaatac ctctctaatc ttatactcca caaccatttc gtgattattg tacagtcgta     1140
tttcacacca tggagggtta caaaacctct ttcttgctgg gcgaaacgat agtcattgtg     1200
tttcctgatg tcgtgatatt tgcataggga ggttaatcgg tggagtgaaa actaaggacc     1260
cgtctatcgg atgatttta tattggtcca ttctatatcc gatttgggag gcatagtcat     1320
acctgcggga atactatttc taccacatac cgcgtattgg gattggcgta cctatattat     1380
tatatgagct gaggatggaa tagtaggaag tcattatctt cggtcgaaag gcgtatcctt     1440
ctctattaca gtaggcatgt gagaggcatc tgtaccgact cacgagacaa atacaaatga     1500
gtactagaaa gattgaaccc gtgttgggat ctatccatga ggttctatca caagatgtct     1560
gatatagttt ttaagaatca agcccctatc ggacaaatca tttggagcgt tgttgcagcc     1620
gtaaactgat cacactttag ccgcaccgtt acagtaatcg taatagagct ccgacag        1677
```

(2) INFORMATION FOR SEQ ID NO:966

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 860 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...860

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:966

```
ggatcccctc ttcgatctca acgaatacac cgaaattggt gaagttgcga cacgagcatg       60
gtgacgagag cctacaggga aacgagtttc gatatcagcc aaggatccgg cttgagttgc      120
ttcagaccga gcgacatttt gcgttctcgc ggtcgagcgt caggatcacg gcttccactt      180
cgtcgcctac atgcagaagt cctgagcaga acgcaagtgc tgtgtccatg acatttcgct      240
tacgtgataa gaccctcaac gccctgtgca atctcaacga aagcaccgta atctccatca      300
ccacaacttt acccttcacc ttatcgccta ccttaagctc gcttcgagag catcccaagg      360
atgaggcatc agctgtttga gtccgagagc gaacgcttgc gatcttcatc aaagtcgagg      420
ataacgacat tgatcttctg accagctgta cgatttcttc cggatgagcc acacgacccc      480
atgaaaggtc gtgatatgga taagaccatc cactccaccg aggtcgataa atactccgta      540
gaagtaatat tcttgacgat accttcgagt acctgccctt tttcgagctg ccgatgattt      600
ctttcttctg ttgttcgagc tctgcttcga tgagcacttg tgggaaacaa ctacattctt      660
```

```
atattcttga ttgattttca caatctgaac tccatcgtct tctcaacgaa tgcatcgtag        720
tcgcgaatgg ggcgccgtcg atctgtgatc ccgggaggaa agcctcgata ccgaatacat        780
cgacatcata ccacccttgg tacgacactt cacatagccc tttacgattt cgttttttcg        840
agagcctcgt tcacgcgctc                                                    860
```

(2) INFORMATION FOR SEQ ID NO:967

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 583 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...583

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:967

```
ggatacgtcc ggagaaggtg gcagcagtgg taagcagggc agctccgatt attcacctcg         60
aaacggaacg agggtgcccc cctgtgggtg caccctcgtt gtacaggccg gactgatccg        120
gcttagagaa ttgtctccag ttgatcggat tcggatctac tgcccgtata atcccatgtg        180
cgtccaccag gtaacttgga aacggatctt caagccatag atgttgagca tttgatcgcg        240
tttacatttt ccaccagtcg ctgggcagac aagtctattt ggtcgaaagc caagtatttg        300
tgaataccga caggtttttg tccatcgaaa cacctacata ccgacccgac tgtcgggtct        360
tttggcaaaa taacgagacc atcggacatt acggccctgc tctctccatc gtatgccgcc        420
cagaagtgga tcagcgtgta caagcagcct ctgggctgcc gtccgattgt acgaccaaag        480
actttacctc ggcaccgctg cccctactgc caagccatct atggcttcgg atggagaggg        540
gccgagctac ccgacaaaag caaggcagcc gcgaccaatg agc                          583
```

(2) INFORMATION FOR SEQ ID NO:968

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1401 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1401

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:968

```
gcacggctgc acgaagggct tccctatccg attctttttt gatggccggt tccatttgat      60
cctgttgcca agtctgccgt agtcggtatc gctgaaccca aatggtgtac acagacttcc     120
gacgtgattc gcttttgtgc tgtgggttat cgttgcggaa gagactcagt tctttctctg     180
tcgatagatg caggattgca gacgggcatt catcctctcg gccagctcca ccgcttctgc     240
cgatggcggt aacaagcctc ttcactacgg atgagaggat ggaaatgtat gtccaatcat     300
tcccgtattt ggctttgtag tgctctttgt tggctcggat gattcctctt tttcacagtg     360
cgtggcgatg agcaggtcgc attctccgaa tatttctcca gcgtttcctt attgtccaca     420
agcatattgc cggtagatga acgaggaata gcttcagacc gggtaccaga tgcttgtcca     480
cccgtttgat tcatcgatgt tgtcattcgt gccaccgaag aagaagccgt agttggccct     540
gccgtgtctg caccgatctg ccttttctcc agcagtcgct cccacatttg gtaggaggat     600
tcgtattggg catatccata aacgaagtga ctccgncgct actgctgccc ggctttcaga     660
ggcgatggta gctttgtgcg tcagtccggc tcgcggaaat gaacttggtc gtctatacat     720
ccggggaata gcctcgaccg ctacactcta tgacttcatc ggcggagaga ttgtcatccg     780
cgggagctct ccttcgataa tacgggagat aaatgcgcca tcaatcatca ccgaccgggg     840
aaggtttttc cctcgttggt gataagtgcg ttgcgaagaa gattttcatc tctttcgtac     900
tattttcttt tgggaaatcc tttgaataag tccagtagcg tagcttgatc acgcccgtaa     960
aagcttcacc gaaaatagaa tgttcatttt cgacgttccc aaaacacgat tgacgaaagt    1020
gatgggtatt ctttcaggcg aaatccgaga caataggccg tgtatttcat ctcgatttga    1080
aagcgtagcc cttgaaatgt accgaatcaa gatcaatggt ttcaagactt cgcggcggta    1140
gcaaacaaat ccggcagtcg tgtcgcatat attcataagg tcacgagacg cacatatacg    1200
gatgcgtagt agctcatcca tacgcacttt taggccagtc cttgacgcct ccgcccgata    1260
catagcgcga gccgtcgcta catcggcttc tcctccggcg caggcattgt atagatcgat    1320
caattgtcta ccgggtggct gaaatcgcag tccatctcga atatatagtc atccctcgcg    1380
                                                                     1380
cgatgctcca tttgaatccg g                                              1401
```

(2) INFORMATION FOR SEQ ID NO:969

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 768 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...768

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:969

```
ggacgatccc tcctccctgt gnaattgaga aaccgtacac ggctaccgag gtgatattat      60
ttgtactcat tgttctaaat aagtggtatt cataatttta ctccacaaaa atacaaaaga     120
acgagcggtg tatcaaaggg ataaaaaaag gtgtgcaaaa atcgcctaat tgcgatttcg     180
acacaccctc tttccaaatc gatttaatta ttgtctttcg ctaaccgtcg aatcagctca     240
gtttgggatg attagaccgg aacgaagttt cggctcgaac caagtagtct tgggggcatg     300
atattgcccg aatcagcaat gtccatcagc tgtttcatcg atacggataa agagcgagag     360
caacacgcat ttcgccactg tctacacgct tttcagttct cccagtccgc gaataccacc     420
cacgaagtcg atacgcttgt cgagcggaga tctttgatgc ctaagatctc atccagaatc     480
agattcgaag gatcgtaaca tccagtacac cgataggatc gttgtcatca taggtgccgc     540
ttttgctgtc agcgaatacc atttgccacc gagatagaga gagaagtttg cagcttggag     600
gggcgatatt cttccgtccc tttgcattct acttcgagtg ttgagacagt ttctgcaaga     660
```

```
attcttcatc actcaagcca ttcagacttt cactacccgg ttatagtcga tgattgtgag        720
ctgatcggca gggaacatac agccatgaag tagttggact cttcatcg                     768
```

(2) INFORMATION FOR SEQ ID NO:970

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 431 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...431

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:970

```
gcatcgttgt ccacggaggc gggccattga caggaacaaa taccctgttt tcagaatcag        60
agagttcgtg tacggttgtt cattggtggc caaagcgcat atacctcgta cttcgttccc       120
catgcgcagg tctgtgctgc gaagtagctg ccatatcttc cagggcttgg tgctgagggt       180
gattgtcagg cactttctga tgaggatttt gttcggtgcc aaatacttgc cccaacagtc       240
cacatgttga tatattcgcc gttcggatct tgtaccacat catgatgtgt gatgcgagat       300
agctttcatc ttttgattac ttgagcttga gacagagagg agtctccgta tatgcgatat       360
gtgactgcac agcggatcca tatccgtccg tctgtagttg ccaccggtct gcttgagctt       420
catcccgaac a                                                            431
```

(2) INFORMATION FOR SEQ ID NO:971

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 561 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...561

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:971

```
ggttaccaat ctcaccggaa ctgcttccaa tgacgaagtt tctttggacg ggacggtgtg        60
gaagagaaag ctgaagagcc ggcaagtgat aaagcagtag ctacaacgtc tacaagaatg       120
```

```
gaaccttgat cggtaataca gctgaaatca ttatgtggag accggtgtag ccaatggtac    180
atacatctac gaagtgaagt aaagtatcct gacggtgtat ctccgaaggt ggctgtaacc    240
gtgacgtgac caacagctca ttgagcaatg tagatggaca ggctccttac acatgcgagt    300
agaaggcaag aagattattg cggaagccca tggtatgatc acgtctacga catcaacgga    360
cgtaccgtgg ccgtagcccc gaatcgattg gatacatggc gcaaaccggt ttctatgcag    420
tgcgcttcga tgtgggggaat aacaccatgt atcgaaaata caagtaagat aaagcagata    480
ctttcccctg ctaaagacaa agaggctgcg tcgagattat ttttcgatgc agcctcttct    540
tttgctactc atgcccgtat t                                              561
```

(2) INFORMATION FOR SEQ ID NO:972

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1315 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1315

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:972

```
gagtctattc agacaaagca attccttgag ttttttccttc ttccttcgct cagtctatgg    60
gcaaagctac ttgttggcga agagtgatcc gccacaaaaa ccgtatcagg gcaaaaacag   120
aagcgcgagc tgctgattcc attcgaactt ttatcaagcc aagcccggcg ttgcccttgc   180
tattgggaaa tacgtatacg agatgaagcg gagacgatga caacggaaaa atcaatccgc   240
cgaaaagtgt agcaggcatc atctcacagc cgatcggttt acgtgccgga attttgtgtt   300
tgcagtttgg aaaaacgtgg tgcgtaaact ttttcgcttt ggccgagaag taaaaaaatc   360
tcgaaccaaa acgaaaaaat tccggcacca cctcttcaga aaagacgcgc cgcaatcaga   420
ggattttcgg ctcgtatcgg tggatagtgg ttgatggata ttgactcgat agtagagctg   480
tcctccaacg cagccctaag aaaaactcga taaaaaaagc actattctca ttgccggact   540
cgaagagatc gtcaaggacg aaccgaatga aaaccaatga gatctcatgc cctcttcgac   600
gaaataaccg atcgttccat ccgccagcag agtcataccg agtaggcact cgatcctgaa   660
ttgacaacaa cgggagcgga ccagcgccgg agacatgatc gaagagatag acagctccat   720
cgcgacgccc atccggccga gaggcaggga gtgcagcact tgatcccttc cgttcctttt   780
cactgaagca tagctccatt acagccgggg tcatggatgc cctcgaactg cttgctctct   840
tccaagtaag gccatcgtcg gaggagagag cgaagaaacg cttcggctct cctgccgtcc   900
ctgattgcgt atgctcatca gtaccctgcc acgggcatca atgaaagctt tgcctcatcg   960
ccacggcggt atgcacagtc gaaagctgcc atgtatcagc cctcatcgtc gctatagagg  1020
acatagttgt caggacgtac tcctgccctg attcgcggat ggcagccaca aacgtgatcg  1080
accggatggc agcacaagcc cttgtcccga agcacaaaag gaggccacca gcgactgcgt  1140
cccggatcgg cacaatcctt gccgaagatg aaatggttat atcccgagga ggcgaccaag  1200
tcagtccttc gtcccgactt tccgaatata agtgcgctga ggacgatcgg gggtagactg  1260
ccacaggcct actcaccgac aaagatcatc aggagctttc ctgcttgggt ttgca        1315
```

(2) INFORMATION FOR SEQ ID NO:973

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 419 base pairs
        (B) TYPE: nucleic acid

```
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...419

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:973

aggcaataga catagccgat agtatgttga ggaaagcaaa ggaagagaag aggaaaagga     60
aaagaagaaa gataccgtag ctatatccat acagaaacca gtgggcagaa gatagagttc    120
ctactgccgt gtaagcatag taccgatagt gtaaacaaga aacaggccta tacaaaaagg    180
caaccgagct tatacggctt ttaaggaaga tgacagtatg ctcaacagtc ttatctattg    240
gatagagatt gttgagacaa ttttcaccga cgaggtaccc tataccaaga gcgacaatgc    300
ggcttgacaa ctttcgacga agatcacagg agaacgaagt gttcgactct gaagaagtat    360
ccactccatg catcactccg aagatccccc gcgttgaaga caaagaacta ctgcacgca     419


(2) INFORMATION FOR SEQ ID NO:974

       (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 1905 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1905

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:974

aacttcaccc gaggggcaag ctgaaagcat catacttaat tcgctcacct acttccgaaa     60
ctcatgccca cacttcatcc ctaccctatg attgagagtt cttgataatg atgaagcggg    120
ggatcgagca acgaaacaac tcatcgagct gggctacccg tcaaggatat gcgagcgtgc    180
tacgctccct ataaagcatc aacgagtatc tcactctagc ggagcaaagg aagaagatcc    240
tcactcgcac aagcgaggac tgcgtcgata aatcaacact ctcagctccg caatagaaga    300
ggccaatgtc gagacctcga gacctcgaga tctcgagaaa ttattaatcg aggtctcgag    360
cttaagtttg ctcgagcgct aaagaaacag aggatcggta gaggcaatga agcatccctt    420
cttgacactg gcaaggtgtg ttttgtacca caaattgcca tttgtaccac aaagaccctt    480
gcccccaaag gggatcaatc actccgaagt cgtgaataga cgatggacaa aaaatatgat    540
atgcaccaaa gagcttctca gtaagcaatt cctgacctct caacaagaat ctcacgagac    600
gttggagatg tgcataggct ctattgccag aatagattat cttcatatgc atatgaacct    660
gataagtcat aaatctttcc taaacctgat gatttttgc ttcattaat ttttctccta    720
```

```
aagaataata gacaaaacac atctagaatg tgaaagatat tctgacaaat agtctttcg      780
catactaacc cctttaagct tccacccgaa tatttaccga aacgatttca ttgtggatat      840
atctcttact acacctcttt cggctgtgta taactttaag tctccataat gtgatggttg      900
ggcatgcata cttcgggcaa ccattcatta gatcatcaaa accaagctat tttcctgcaa      960
ttgagactca tatgacaact caatttaaaa cctacacctt cgtagctatg attctttttcc   1020
cattcatctg ttgtcgaatg taggtctctg cccaagggta ttcattccac aaataatcgt   1080
gcttccattt aggcattcag gcatccatcg cccatagaag ttctgttttt agcccatttc   1140
ttgtaagcac tcaactcttc tttcttaatg aaagcacatt ggtatacaag aagagatctt   1200
tgatggtacc atctgctgct tctgtttatg cccatcatag ctcgttagca gcacccagtc   1260
tgcattatcc ttgttttcaa gagcaaccgc ggagctggta attgataccc tctatccatc   1320
catgctcatt atcaacatta ttaacttcct ctaatagatt gatttcaaaa gaataaaatc   1380
ttttccttgt ctacccaata gtgatggatc tattgtggaa tttcgtctgt caaccatgga   1440
taagggttcg atgccatatc ctcttgtttg gtatagcata accataatat ctacctttca   1500
aaatcgaaca ataatcagaa gtattgcatc tgttttatac aaggccatcc aaagatattt   1560
tttaccaaac gctccgtttt gttatcatgt cttgatgtac tgtataccccc ttcgtccatt   1620
ttccaagttc atcatcccag ccatattcat tcaatataat gcctgcatta cacctctaat   1680
atgctgcaat tgaacgggtt gatattcccc tccttaatct cgaagaatac acgactcgaa   1740
ctagaagaat tagacccgag gacaatctat taaaatcaga aaaaccgcac aatgtataat   1800
gcaatctttt agaccatcag aagagccaaa ataggtttct ttaccctcca attgtgacgt   1860
cataacgaat aagggctctc tgctatgaag ggaacttcta tttcc                   1905
```


(2) INFORMATION FOR SEQ ID NO:975

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1448 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1448

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:975

```
ggctgttgga tatgcctaca cgcagtcgca ttatatcgaa gataacgaag ctggtttgct       60
accgaatact atcgatccgg ggaaaagctt ttctccgaat tatgaagttg caaaccaaag      120
atgtgagtgc tttttgctgt ggcaagggaa gcgcatcaaa ttctataccc ctaaatggta      180
gaccgagagc gggaaagcta tgaatgacaa aaaactgctg gttgcgtacg acatatcctc      240
caacagcgaa gacgtaaggt tgcacggata ttggagcagt gtggtatacg catcataagt      300
cggtattcat ctgcagcctg cgagagctga caatggacaa gttgtagagg ctgttacctc      360
acagacagct aagagagaca aggtgttttt tctcctctct gtcagcattg ttacaccgct      420
gcttggatga gcggacatcc gccctcccta agagccggag aaaaaggaaa agtattgtgg      480
tttagttttt gaaaaaaatc gaacctcaca tcgctctttg acgtattgat tatcagtcgt      540
tgcaagaaca actcttttct cctgtttttc gaaaatagga gaaaaggaaa ttgggacttt      600
tattttcgaa aaatagaggc ttttcgctat ttgtaaggtt tgattatcaa acggtgtctt      660
tctctatttt tcgaaaatct aaaaaagaag gctccctctt tcttattttc gaaacggaa      720
aatcaagaaa tctcatgtat atcaatgaga tataatcaac tcaactgcaa aaatagtgtt      780
gtagtgcatt tctcaacttg tattttcgaa aaaaatagaa tcgttctctg ccatgcgtta      840
cgtttgggat tattcgtaac ttgcagtcgc tcaagtactc acatacatac acagtccgta      900
aggctattaa gactcactga ccatgaggta agtacccatt ctatcggact cactatacat      960
acacagtccg taaggctatt agactgtttc gccatgactt aataagtttt acaatttttg     1020
```

```
actcactatc atacacagtc cgtaaggcta ttaagacatt actgatagca ctgcaataca        1080
gcgaatacca agctcactat acatacacag tccgtaaggc tattaagctg tcgattttct        1140
ttaccaaaag ccagttttac tgttggctca ctatactaca caaggctatt aagactttga        1200
cagcccttct taattcccct ctctaaaacc tcactataca tacacagtcc gtaaggctat        1260
taagacctat catcttgcta tcatctgata aagccctacc caaaaactca ctatacatac        1320
acatccgtaa ggctattaag actctaagca ttatagctat accatcatta atcttggctc        1380
actatacata cacagtccgt aaggctatta atacttgtga gatagggctt ttctactcct        1440
tcttcctc                                                                 1448
```

(2) INFORMATION FOR SEQ ID NO:976

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 398 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...398

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:976

```
gctcctgccg taatgagctt tctggagcag cacaacctca aaggcaagac atcatcccct          60
ttgtcacaca cggcggtggt ggcatgggca agtgtttgac gaaatgaagc gactggcacc         120
tcaagcgaca atcctcgacg gcatcgtatc gacggcaaga aagccaaaga atcggccgaa         180
gaagtccaca acagccgaaa gcgatgggac aaatcaaata acgacaacca tccctactcc         240
agaccctgag gaatgataga ggcaagcttt cccccacaaa tcaaacacaa gctcctaccc         300
tccccggttc ttttccccca caaaagagg cgccatccga cgctcttttt tatacccaat          360
aaccaccaaa tacgcaccaa aaaacttttc aaaacgaa                                 398
```

(2) INFORMATION FOR SEQ ID NO:977

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 611 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...611

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:977

```
acgacctccg gtacgatggc gcacccatgc atatcaggcg gttttccaat tgcccgtttt      60
gggggcgag tcctgccggt tcgttatcag tgaggtgcgg agtctctggt ggttttgcag       120
gccaattctt ccctgacagc atcgcttttc ccgttaagac tgtcggggat aagaccattg      180
agttcgtggc tccgccaagg gtcaggatcg taggactatc aatacgtttt atgccgtgga      240
cttgtacagg cttctgctcc ggagatcctc ggagcggtac ccaatcaaaa cctgatggag      300
aggaaatccc tgatctgatc attgtctcta ctcaggcgct cctcttgagg ctgatcgact      360
ggccacctat cgtagagaga aaaacgggct gaggttttgg tcgtgttgca ggaacaggtg      420
ttcaacgagt tttcgggtgg actcccgatg ctacagcata ccgcctcttt gccaaaatgt      480
tctacgacag tggaaggcaa atgcacctgt gggagagacc ttcccgatgc aaatgcttcc      540
ttcggtgatg ggctcatgac aacaggaagg tctccgtagc ttggcagaac cgtatctcca      600
acaaacggag t                                                           611
```

(2) INFORMATION FOR SEQ ID NO:978

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 575 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...575

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:978

```
gtcagtgctc tccccagtgt attccttttg gtcaggattt gatcggttac tcgattggat      60
tttgaccgtt ttcctcatat ctaagatcaa aattaaactg atggggtgct tcataagttc      120
atctccatcg gatgaaactc gtctgcgaaa tccttagctt cgggggtcaa ctgtgtccat      180
gtaggtgtgt gatccacttg aaaccacaaa agaatgtgcc taggacatac tgacaagcct      240
taagacagac gtttttcccac tgccattgtc gcctattaaa aggttgactc ctggagaaaa      300
aatagctcca agtcaccaat atctctaaac tcttcgatgt gaatctacta atcataacct      360
acatatatta caactagaca aatatatata taactcgaga cctttgaaaa ataaggaggt      420
ggaggcaggg caaccgcatc aaatgtaagt acctgattat caatcatagt tttgagtata      480
tncttatctt gagtataatc tccgaaatgc aatcatttga aaattagcac ctggattttt      540
cgaatttttg atgcgttgcc ctgtgcaagg tctta                                 575
```

(2) INFORMATION FOR SEQ ID NO:979

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1223 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
     (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
     (A) NAME/KEY: misc_feature
     (B) LOCATION 1...1223

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:979

```
gacttccgag tacagattca ggcactgtat tagcaggttg cccggtgtcc aggtattggt      60
tgtcttaggg cgaaaacgcc gattgcgtgg cattaagtac cgggctctta gcagtcggca     120
taacctatac cgaccgatcg aaacctcctc cgaagcactg cttactgtat taatgaataa     180
ctctctanag ccggcttcgg taggctttct ttgcacctga ggtactgata ataatggact     240
atactgtatt taatgtcagt tcgatctaag cgcaaatagg ggagttgggt ctggtcgaac     300
tgacgttata gttaaggcaa taaggtttgc gacatcctcg tttgtttagg aacagcaata     360
tgtgcattat gcttaccttt gctcatcaag gaccgcaacc gcatggctgt aggcttcgga     420
tgcatttcca ataatacaca tcgacaaaca aatgaacttt gtagaagaac tgcgttggcg     480
gggtatgatc acgatattat gcccggtaca gaggaacact tgaacaaggg tatgacctcg     540
catacgtagg cattgacccc acggctgatt cgttgcacat cggccacccg tgggtgtgat     600
gatgctgcgc catttccagc gtgccggcca tcggccctcg ctcttatagg tggtgctacg     660
ggaatgatag gggatccttc gatgaatcgg ccgaacgagt tctcttggac gaagccactc     720
ttcggcataa tcaggctgca tcaagcagca actggccaag ttcctcgatt tcgatagcga     780
tgcaccaatg ccgcaaagct cgtgaacaat tacgattgga tgaaggacta ttcttcctcg     840
gtttcattcg ggacatcggc aagcatatta ccgtcaatta tagatggcaa aggattctgt     900
gaagaaacgc cttagtgccg agagcagcac cgtctgtcct ttacggaatt ttcctaccag     960
cttctgcaag gctacgacta ctctatctat atcggaatga gggctgccgc ttgcagatgg    1020
gcggttcggt cagtggggca acattaccac cggaacggag cttatcagac gcaàggacga    1080
ggagaggcct ttgcccttac ttgtccgctt attaccaaag ccgacggggc aagtttggaa    1140
aaacggagag cggcaacatc tggctcgatc ctgccaaact tctccttatg ccttctacca    1200
gttctggctc aatgtgagcg atg                                           1223
```

(2) INFORMATION FOR SEQ ID NO:980

     (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 550 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...550

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:980

```
ggctaagaag gaagaggata caaagggaga gaagggtgac atgtttacgc ggctgctgta      60
tattcggata tggcgatagc cttttcgttc tcattcgcac aatggtgtag acggtgtcgt     120
ccttggacag ctctatgagc aactccacgg gatgcaccga agataagaga taagaactcc     180
ggcagaacgt tcgaacctgc tatactgcga acggggcctg cćggaggagg tgtctcgacg     240
```

```
aagctttgtc cgtaccgttc catttcgaac ctgtcgcgat gttttttgccg gtgagagtgt      300
ttgcgactgt gctgtcatca tgaggccggt gagcccccat acacgatcat cagactcttt      360
cttaaaaatg tgttcatcat actttttttat ttgaggttat gaataatggt ctgtattatg      420
gtcgggaggt cattcgccaa agtccttggt gccgtagagg gtattgatcc acatggcaaa      480
aagtttgtcc tgacacaata gaccttgttg atctcggtga taatgtcctt gtcgagcagt      540
tgtttgcagc                                                            550
```

(2) INFORMATION FOR SEQ ID NO:981

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1017 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1017

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:981

```
cattcttctg tttacttgca gagccataca ctgctcatga tcttccctgg atgagactgt      60
tgcatggagt ttcattgact ctttgctgca gagctgatct tagtgccttt gggaaagatc      120
aaacctccgg tatatggaca tcgagcaaca gaaatttccc caagtttcca ttagagaagt      180
actcctttcc tcgtcaatag gcgagaaata agaaacgatt gtcggctgtt tcttgcttcc      240
tgcacatgca ggacgcgatt gtcggctgat tcttgcttcc tgcacgatgc aggagcgatt      300
gtcggctgat tcttgcttcc tgcacgatgc aggacgcgat tgtagctgat tcttgcttcc      360
tgcacgatgc aggacgcgat tgtcaactga ttttgcttcc tgcacgatgc aggacgcgat      420
tgtcggctga ttcttgcttc cgcacgatgc aggacgcgat tgtcagctga ttcttgcttc      480
ctgcacgatg aggacgcgat tgtcagctga ttcttgcttc ctgcacgatg caggacgcgt      540
tgtcaattga ttcttgcttc ctgcacgatg cagggcgcaa ttgtcagtga ttcttgcttc      600
ctgcacgatg caggacgcga ttgtcggctg attcttgttc ctgcaccgat gcaggacgcg      660
attgtcagct gattctgctc ccatcatgcg ctaactatca gctatttgca actatttttat      720
aggactttca ttaaatcttt tgccgcagag ctgattctta agtgtttttc aggaaagatc      780
aaactcatgc ataagggcac caaacaaata gaaattactt gaggtttgca gaggatcgca      840
tgaagctctc ctttcttcgt caaatcaatg cttgtgtctg tctgatcgat atgaggaggt      900
gggaggttat tgtgcaacag tctctgagat aaaagaatga acccatacga gaggatacta      960
tggtcttcgg agtcgtacag tctataacca aatccactcc ataaagcaaa gaangag       1017
```

(2) INFORMATION FOR SEQ ID NO:982

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 901 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...901

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:982

```
ccccggagcc atgattgccg atgcggtaca ctcgttgtct gatctgctgc cgatttcgtg        60
gttttcattt ttatctccat ttcgggaaaa ccatccgaaa gaaccacgat tacggacatg       120
gtaagttcga gaccctcgcc actgcgacat tgctgttacg ctgatcatca tcggagctat       180
gctctgctcc gatggttgac caaggtatat cgctatctcc gctttgggga cgaattggct       240
cgtccggatt gatagccttg cttatggcct ttgtctccat tgtggccaaa gagtgctgtt       300
ccgcataacg cgatgtgtcg gaaaagagga aaatagtcgt tcatcatagc caatgcctgg       360
caccaccgta gtgacgctta tacctctgtg gcactttcat cgggattggc tgtgcttttc       420
ttttggggcg cggttggatg acctcgaacc gctatcggct gctgtagtaa gtgtctttat       480
catcaaggta gttttcaaat ggccgttccg gctttccgcg atctgctcga acagagcttc       540
cggatgatat tgaagaagag atagaaaaaa tcatttgttc ggaatcgagg taaaaggtgt       600
tcgtcggatc cgcactcgca atatcggtaa ttactatctg tcgaagccga tattttgatg       660
gatggaggcc tctctgtggc actatccatg ctgctacgca gagggttgag aagctgctgc       720
gtggacgata cggccaccca cacatatagt catccacgtc gagccgtttt catgatatat       780
gttgccataa ccttttcaaa ttctgtaaag ctttatgacg actgaaatca aatggaagaa       840
atgcgttttt atgcccgaca cggtgtgctt gagcaagagc cgcaagtggg ggaaccggtt       900
t                                                                       901
```

(2) INFORMATION FOR SEQ ID NO:983

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1437 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1437

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:983

```
agtatttgtg ttctgcatac gcacaagata gtttccgcac cgtttcggta gaataacagt        60
tatcgacaag tcgaaagaat gtcggcgtc ttcacagaga aagcggaagg tgaacgatag       120
tagtccacca gatatccaaa cctgtctcgc tcagctctcg aagcgaaagc tttcatatta       180
tcgaatgtaa tacgacaaag agctgtaaat atgtcgattg atggggtgga attcccttc       240
catgacagga gcattcggta cgaagcgacc atcagcagga tcgaaccaac gcggataaca       300
cttcctccga actgtaaatc gggtatcaac cccaatggaa caacaaacga aaaagaaaag       360
ccagatgaaa attagccatc ggcccgtcca ttcttccaac ttatctatgg aaaaagccac       420
aaaatcatac agattcgtat cgcttccggc agtcgtaaga tcagataaag aaattctgcc       480
agaaagagtg tatactattc cttaccggat cggactgaat acggccatgc aaactgcatg       540
tttggcttct ttgataaagt gcaaatcgcg gtgctgcttg tgttcggcgt aatctccagt       600
```

```
tcgttcagag gagaaataag caaacgcaag ctaccgcact tttccctcgc ttggatgaac      660
gtggtatcag ataggacact ctgccatctc tctactgaaa agatgggcta tactataact      720
atcgttataa gccgtttgtg gagaactatt gctctgctga ctataatcat gactaaccga      780
agatgataca aatatcgtct attcagtcgt ctgaaacaat cgttttccac ataactgtcg      840
ataaacctgt tgaaaattcg ctgataaaaa cttgtttatt ctttgtccga tccgaaagaa      900
tcttcatata aaattattct tctgcaaaga caaaaagtta gcagcaaatt ctcatcaact      960
tttgccaagg attactcaca ctcggcacaa aaacaaacag accgaattga ccgtagaaac     1020
aaaagttttc acattccgat ggaaactcat tggctatcag cattcaacga agtgtatacc     1080
tgttagtaag ctatcagtat ctattccaaa tctgttaatc ccctacctat tcaccgagta     1140
gttacaagcc ttatcaacag tttcaaccga cctcctcttc ctatatattt tttctttttca     1200
aaaaggaata tataataaaa agaaatcggt tgcccacctg ttgaaaggtg aagcaaccga     1260
tcgtgtcaca gataagaaaa gtagctatga attttatttg atcagtagcc ggattatcgg     1320
ttggggatca gaaattgatc ttttgtaccg acgaaaatcc ttctgggctg caaggaccgt     1380
atacgtaagt agaagcttta cccggtccct tgtccgtgtc ttctgaatag ctgttga        1437
```

(2) INFORMATION FOR SEQ ID NO:984

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 447 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...447

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:984

```
gcaattatgc ctaatctgct tggctttcat ctgccttttt tttctcgatg ctgtggtaac       60
aaaaatacat ttcgtgtcga agggtcgatt gccggttaga agacaccgca caagtgtatc      120
tgaccaagat cattgggagc gatcttttgt actcgattct gtaaatcctg accgaaaagg      180
tcgtttcagt tttgtacaca agcggactcc acaccgtctt tctaccagat taaactcagg      240
aagcacatat taattttgcc gcaaggatcg gatcggaaat caacatacag gtggtccgta      300
acagcttttc cgattacgtt attgaagaca accaagggcc tgaaattaac aatattcgca      360
aggattggcg ctattgaaag agcaagcgga tatcgtttgg atcattttgt accgttcata      420
ccaagagaac aaactggatg ctcgcag                                          447
```

(2) INFORMATION FOR SEQ ID NO:985

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 870 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...870

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:985

```
tggatgatat tgcagccggt cgcaagtaca tgaaagtgta caagcagata aaatgtacaa        60
cgatcccact cttaatccga ttcttttggg caagaagtga aagcgaccgt tccccgcatt       120
catcattcct tccttacgga caactgcgtt tccccgtttt ttacctttct gtcgttctcc       180
catggctcga tatctgtagt ccgcttgtcg gcaataggcg atgtggcaat gacaataccg       240
gtttttatgc ggtagccaag gcatacccac agcatagttt cacactgctg actcgccttt       300
cctgacatcg ctactaatca accctccgaa caatttggaa gggtggggat cgacatcaag       360
cacgaagagt cttccttggt cggtcttctt actatatcgg acgactcaag gatgaagcag       420
ttcgactatg tcatcgacct aacaatgtaa tacgttccaa aatcattcgc ttctatcttc       480
gctttttcgg gtcaaaggtt tcagtctgaa gaaaccgcga ctacagcttc ggcagcttag       540
gccaagccac ccaaaaagcc aacccgattg ccttccgtaa tagaacgaac gctcaggttt       600
ttcacaaagc cgggcttgaa atacatcctc cctacccatc cttctgaacg actccggaca       660
tatctctacc gaactgccga tagtgggata ggctccggac accacctcat cgggatagca       720
ccgtttgccg gtcataagcc aagacatatc cgccggaaaa aatgcacgag gtagtgcgta       780
ccctgccgag agagacgatg tgcagatttt tcttttcggg ggtaagggga aagaaaaaac       840
atactggagc agtgggcaga cgaatcgcca                                        870
```


(2) INFORMATION FOR SEQ ID NO:986

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 459 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...459

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:986

```
cgttcaggcg aaacgaaccg acaagaaagg acttgtgcct gtcatcgggg catctcagtg        60
ggcagaaccc attcaggctt ctccaccaag tgcaagaccc gctcgctctt tgggacagcc       120
gaaaacaacg gctcatcggc aagagtgaat ggcggtgtcc gtcaatcaga aactcggtga       180
atgcaccgca ctcatcacgc acgctttcac gaactctgtg aaaggaaaga aatttttacc       240
gccacgacgt gagggatgcc tatcaggggc aaatccacca ccaagccctg ctctggagag       300
tttcggagag tatctcacac agacaaaaga gcgcataggt attacagagc tttgaagacg       360
ttcaaactcc gtacctacca gctctccctg ctcgtgagta tgtacaaaag aagcacaagg       420
taagagacat tccccttcca cgttggataa agcctttat                             459
```


(2) INFORMATION FOR SEQ ID NO:987

```
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 888 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...888

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:987
```

```
cttttggtcc atacttatag atactcctta ggttgcatta ttttttaccg tacaagcctt    60
cgaaagtatt catggtcaga gcggcatata atgattaaac atataaaaat aaatccatca   120
gcaagattgg ccttgctgat ggataatgta ggaagagaca taccaagccg acgaaatcgg   180
ctgcttgtct cacttgccga ttttagccac gaggctcgcg gtggtcacga tcaccaccac   240
gacgtcgaag ttacgacctc cttcgcgtcc tccttcacgc cgctcacgcc gctcctcggc   300
tgaggctcca cgtagccttc cggttttttcc agtagcacct tgcgctgagt ttgaacttgc   360
cggtcttcgg atctatatcg agcagcttaa cgtgatggat tcgccttctt tcaggttggt   420
gtcctcgatg gtctcgaatc gttccaatcc acttccgaga tatgcagaag tccttccttg   480
ccggggagga ttcgacgaag cagccgtatg gcatcacact tgtgatcttg cccggatagt   540
ttctccgact tccggcatag ccacgatgcc cttgatcatg ccgattgcgc atcgatgcag   600
ggtttgttcg taccactgat ctcgatgaca cccatgcatc tacctcttcg atgttcactg   660
tggcaccact cttctcctgt atgcctggat gatctttccg cccgggccta tgactgctcc   720
gataaactcc ttgccatatg catcttctcg atacgcggng catgaggcta tgaggtcatc   780
tctttctcgg gctgagcttc catgatcttg ccgaggatgt gtaggcgtnc ttgttggctt   840
gctccagagc attctccaaa atctcataag ctgagaccat cccccttga               888
```


(2) INFORMATION FOR SEQ ID NO:988

```
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 465 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...465

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:988
```

```
aaaaagcaaa tgccggtatc acgggttctt cgttgcgggt ataggatgca tgagcgaagc    60
```

```
cacaaatagc agaccataga acaggagcaa ccaatatgcc atcctttgcg ccctcctatg      120
ccatagagtg gaaatttttt catattctca ggggagaata tcaatcagtt tatgaatgct      180
tgctgtgtcg agtgctccgt cagagagaag cgcaggcgag ccgtgtggag aggcacggtc      240
ggatgcgtat cgggagtacg aagaagccat tgtcctgaag atgttcggcc aacgaatgca      300
aggagcattt tcgcctacca tatagggaat gatgtgactc gatatggcat ttctatgcct      360
tttcccttga tagcatcacg caaaagcgta gcgaatcctc cagccgcttt ctctccatca      420
caaactcagg tagccgacgg atatcagatc agtccatcct atcgt                      465
```

(2) INFORMATION FOR SEQ ID NO:989

       (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 510 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: double
           (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
           (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
           (A) NAME/KEY: misc_feature
           (B) LOCATION 1...510

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:989

```
gattgttttt gatttatata tagatcgttt tccatttata tatagatcga agtcatttgt       60
atataaatcg aagaccgaaa aaggcccttt cggaagctaa ataaaagagg cacccgcacg      120
attcgtggcc gaaccgtgcg ggtgccttgc ctttaggaga agtattaaga gggtttattc      180
ctacttattc gtcatagggt ttatactgtt tgtccgaata tcgaaatgac atggtaggtt    · 240
atggggcgaa aggatcggcc ggaaagatcg ggggtataaa ggtgttcggt gcactgttct      300
gttatagtct attatccatg tagttctatt caagcaatcg gcttctcggc agcgacatcc      360
aacttccgac agagagcttc atcgggcgac aatgtaagaa aatatggttc atccgacatt      420
cagcgtgacg gaggcgtggt gaaggcatag agtcttaggt tgaagtattg ntgatctcta      480
aatccatatg cactcttttg agtacctttt                                       510
```

(2) INFORMATION FOR SEQ ID NO:990

       (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 128 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: double
           (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
           (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
           (A) NAME/KEY: misc_feature

(B) LOCATION 1...128

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:990

gccttaaaaa gccaaattcc gcagagagtt agttttcgtt agttcgaatt gattcttcga   60
ccaaggtcca atagagcctt atagtttcgg atagaaatgg acataatcct aatttgatag   120
cgtttttta   128

(2) INFORMATION FOR SEQ ID NO:991

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 268 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...268

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:991

aaataaaaca cactaataac caatgtgttg tgccattcct ttatatcgac tcacgttaag   60
aaaagaccaa tggtcatatc gcaaaaatgc cgtacaatgt ctctaataag ccccctgggc   120
gatgttgtac ttcttctcga tggcatattg ctccggggct gccgaggtat tcttccacaa   180
tgtgaagacg ctcggatcgg tcaaatgttt cgacatgatt actgcttttt ttgacctctc   240
cgattcgtac acgtcagttc gtaaaaat   268

(2) INFORMATION FOR SEQ ID NO:992

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 498 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...498

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:992

```
actaccggtg gattccgttg aaactactag tagattcttc caaaaccaca gtagttttgc      60
ccgaaaccac tagtagtttt ctctgaaacc actagtggtt tattacgcgt taaaagagta     120
ttgtcgtgtg ccgaaaaaaa gatggtatca ggggcggtta atttcatctt ggttcaacac     180
cgtttaggag cacgacgatt aggatttaca cctgccttcg atgaatatcc tgccgatttg     240
cttgtttcca gcatatccat atacaaaag gccaccctttt cctatgaaag agcgccgtat     300
ctgtccctgt ttctaaccta acctgaaatt attcggcagg atgatagctt cagaagggca     360
tgctgcagca caagtgccac aatcaataca tgatcagcat cgattttata gatgctacct     420
tcagagatag ctgatccgga cttcatcgat gcatgatccg catgctacac aactgtcatt     480
attaacgtaa ccatagtt                                                   498


(2) INFORMATION FOR SEQ ID NO:993

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 388 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...388

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:993

cagactttgg gcgttgagct gtatttggaa gccggcatcc gtggtgttgg atcggttcta      60
tccttgcaga ccgtgacccc gtgacgaagg agaaccgcat ccgcgtctcg agctcctgcg     120
tctggctatt ccgcgtcgta catatacaac aaccacatgg atgttatcgc tgctgcggta     180
aagaatgtat acgacctcgc gaaagcatta cacgtggcta tgtgattaca tatgagaatc     240
caatctgcgt cacttcactg ttgagctgga aaaagccaag taagcggtaa gaaactgtat     300
aaagaaaacg gtaaaggagg ttgcttccat gtcgagagac cagggaagca actttctttt     360
ttttgtggat aaaaaggttt tttgtttc                                        388


(2) INFORMATION FOR SEQ ID NO:994

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 620 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
```

(B) LOCATION 1...620

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:994

```
gacccacagc atttgcgtca cggtaagggg cgactccgta cccacaaatc gccgatcaga      60
acgatgatac aggccacgac gttgatggtc atctgaaaag gataaaacgg cggatattcc     120
gataaagcga tcgtccccac ataacggttt ggcaatgctg ctgaaagaat tgtccagaat     180
ggtgatgtcg ctcgcccttt ggctacggca gtgccatcgc ccatcgagag gcccacctgt     240
gcgcgttgag tgcaggagcg tcgttcgtgc cgtcgcccgt cacgggcacc acttggagag     300
cttcctgcag caggcgtaca agcctttcct tgtccatcgg acggcgcggg acatgatacg     360
cagttcgcct atccgagggc gcagttcctc gtggttaggg ctgcgaaatc cgacccggtg     420
atcatattcc gctccgtaca gtttcgtccc acagccctat ttggcgaccg atctcccggg     480
cggtacccgg gtatcgcccg ttacgatttt cacctgaatg ccggccttca tacagtcgcg     540
atcgcttcgg gaacgtcgga gcgaatggat cggctatgcc gactatccat gaagcggagg     600
tcatgcacgt ggagacgcca                                                 620
```

(2) INFORMATION FOR SEQ ID NO:995

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1151 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1151

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:995

```
tctcaatttg aatcttgaat ctctgacaat atgaattcgt acttgtttta taattgaatg      60
tagcaatcat gagctttaga tgtacgttag tggctgaatg cgattgccct gttacaaacg     120
gacttgatac aacattttcc ctactttgcg ttagtttcct atagtaataa acaacactat     180
gtggcttttg gagaaagtca tgtaaaagta atttgaccga aggctttgtg ggatgtttcg     240
ccgaggattc aagaaggcat acataaagcc ctcagtttgt gtagcatgca atgaagagta     300
tctcaagggt gcaatagtcg gtttgacgcc gacaaacctc gtgtcgagtg tgcgggagtg     360
ggttatgatg tgaatgtctc gctcaccact tatctgccta tcaggggaag aaagagggac     420
ttatttggat tacacaactg accgagaaga tgcccattta ttgtatggct tttccacgaa     480
agaagagcgt cgctcttcgg ccaactcaca tctgtcagcg gtgtcgggcc tacgacggcc     540
agctcatcct atcttcctat gctcctcaag agctggccgc actcattaca cagggcaggc     600
cgatgcgctg aaagccgtga agggcatcgg tctgaagccg ctcagcgtat catcgtggat     660
ctgaaaggta agatacaact ggaaactcct cagacgagat cttgtctgca cggacggctg     720
taggagatgc tgctcgaata ccatagcttc gggagaagaa gccatcagtg ctctaaagat     780
gcttgctttg ccgatccggc tatacgcaaa gcggtcaagt ccattctctc cgagattcgt     840
ccttagctgt cgaagatatt atcaagcgag cattacgaat gtataacctt ttctcaaaca     900
aagaaggatc acgggtgtct tgataatgga aagaaaaaca aacccattcg gctacttgca     960
gctctactgc ccataatcgc ggccttgttt tggtcacatg gcgtccggcg agtggctccg    1020
tacctgcccg actgccatca acaatcacta tacaactccc actccggccg atacgactgt    1080
ttccccgtca agaagaccca agctaaagac taccgttatc tgggtggaac tatccactcg    1140
atctgaagac t                                                         1151
```

(2) INFORMATION FOR SEQ ID NO:996

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 624 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...624

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:996

```
tctctttgac agagtatatg tcctcgtcga gagacggttt cgtcaataaa gccggtaaat    60
cggccctcct ctctgcgaga gggcagaaat cctgcaagaa tggcgaagcc cttctctctc   120
cttcttgtac tacacttttg ttcttcgatg aacaatgtca atgatcgcgc tccgactgcc   180
ccctccccaa tctccgatcg aagcccttca tgtggcggac agtgggtgca aaagtaaaac   240
cttttccgaa tcggcaaaat caatcgaatc ttttttcagg gctgacgctc aagaaaagct   300
cgtcgcctga tcctccccct aaaaaaagaa tcccgacgcg ctcgcggaac aattcctcta   360
tcaatcgggc agcaatcgct tttgcggtca caaagtacgc ctttttttctt tacagacaaa   420
tctttcaaaa tcttttctca acggttcgac aaaaaaaaac agccccgaa gaaaaggact   480
ccctcccaag aagacaaaaa aagaagcata tatataatat agttcgcgcg cgtaagagaa   540
cccaaaagga gcgcaaaaga aacagaatga gaagagaaaa aaaattctcg caaaagactt   600
ttcagtccca aaaggcggcc ggct                                          624
```

(2) INFORMATION FOR SEQ ID NO:997

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 665 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...665

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:997

```
tagtccgctt ctttgcgatt agctgtttca atcttgttat ctccgcacac tccagaaagt    60
aatgtgtact ttagcatcct cttcataaaa gcaatgacca acggaagaac gcttcggata   120
atttttaatg ccggtgttaa gaaacaaaca gatctcaata atcactgact gtactgtacg   180
```

```
atgacaaagg  tgcgattatt  cttacaaccc  ttttcctatg  cctcgcttgg  tgtacccatg    240
cgcagtttct  ttcactgtac  aagctcctgc  gagtgtggcg  atgggagaac  aattagagtg    300
agttttaccc  tcaaagatgc  taatggaacg  gaattcaaag  ctctgccatg  agcgactttg    360
aagtcctttt  tggcccggcc  actgctacaa  gccattcagt  tccatttcca  acggcaagac    420
cactttgtct  cgaagtatca  ctatacatat  accctgatgc  ccaaatcggt  cggcaccttt    480
cagatcggtc  ggcctccatc  cgtgccaacg  accgagatta  taagaccaag  caggtatcct    540
caaggtgctt  ccggccgata  aaaaatcatc  gaaaaatact  aagtcttctc  ttcttcctca    600
cgagtcgatg  ccgtagtttg  ttgtccgaac  catcatcata  agaccaatgt  acgagcagga    660
agcga                                                                     665
```

(2) INFORMATION FOR SEQ ID NO:998

  (i) SEQUENCE CHARACTERISTICS:
   (A) LENGTH: 1230 base pairs
   (B) TYPE: nucleic acid
   (C) STRANDEDNESS: double
   (D) TOPOLOGY: circular

  (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: UNKNOWN

  (vi) ORIGINAL SOURCE:
   (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

  (ix) FEATURE:
   (A) NAME/KEY: misc_feature
   (B) LOCATION 1...1230

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:998

```
ttcggcgact  cctttctcag  tatatcccat  taggtcaggg  caaaagccga  tacagctccg     60
gtgtcacgac  cggtagagtc  gatccgcgga  ctacggataa  agcataatag  gcacgaaaga    120
tgagagcata  agcatcaaga  aggaaaatcg  ctcggtcata  tcgaatctta  gttagagggg    180
ggatttgaaa  aaaaggaggg  gaagctgtca  ttcggcaagc  ttcaggacga  gagcagagcg    240
agccgcagat  agaggttcaa  atactgttca  tgggtaaacc  gatctttact  cccaccggaa    300
gagtaaagtg  ctccacccat  tcgtccacac  gaccgaaacc  ttctacttcc  gtgcatcggt    360
actcatcgct  accgaatact  taccggccgg  aaagggatgg  gataatccga  ataagaacgt    420
tcggggtgaa  aattgaaaac  gagaagaaat  cgcctcgacc  gtaacagatc  acctgctctt    480
ctctcttgag  cagtattcgc  gcaaagggag  tttgtgaaag  ctctccaccg  atcgtatcag    540
gctatcatat  cctgatcaaa  caagtgcaga  cctgcatagc  gcaagaaaga  ctatcggcca    600
gactccactg  cctgcgggca  tacttgtacg  accagccttc  ccttcgcgag  ggaagtctat    660
ccactcggga  tgtccgaatt  cattgccatg  aaattgagat  aaccaccatt  catcgtcgtg    720
gcagtgaaga  gacggtcatc  ttcagcagtg  caatgcctct  gtccacgcta  tgtacacaac    780
tctgttgttc  atataccaat  acatatcggc  atcgatcagg  cgaaatatga  ttgcttgtcc    840
ccgaccaaag  cctgatcgtg  actctcggca  tagctgatcg  tctttcctcc  tgacggcgat    900
tggtcagttg  ataccagatg  tcgccgggat  tcagtcttcg  tcacgatgct  ctttgatgag    960
cttgatccag  aaatcgggga  attcatggct  aaacggtagt  caaagccata  tcccccatct   1020
gccaagggag  agctaatccg  ggcatgccgc  ttacctcttc  ggctatcgtg  attgcatcgg   1080
gcaaagttcg  tgaatgagtt  tgttggccaa  gatcagatag  gcaatagatc  gccgtcctga   1140
tggccgttgt  aatagctgtc  gtaattgtcg  aacctacgcc  gagtccatga  ctatagtata   1200
gcatggacgt  cacaccatcg  aaacgaagcc                                       1230
```

(2) INFORMATION FOR SEQ ID NO:999

  (i) SEQUENCE CHARACTERISTICS:
   (A) LENGTH: 1784 base pairs
   (B) TYPE: nucleic acid

```
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1784

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:999
```

ggactgtcgg	tttgcatctg	cccgaacggt	ctggaaaggc	atgaccgatg	gccacaagct	60
ccctgatggt	tgtacggtgt	caagcttcgt	gccacgcgta	gaggatatag	agtccttccc	120
ctttcgactc	gactacctgt	ttcttaaccc	cgtgttcgac	agtctgtgca	aggtgggcta	180
tgcaggacga	ttttccccga	ttctttgggc	gatcgtctgc	agcgactcca	tctgcccgtg	240
gtggcctggg	cggcattacg	cccgatcgtc	tgccacagct	tcgtagagca	ggcttgcctc	300
ggcagctgca	ctcggctatg	tgtggttggt	cgaaggccgg	gaatgatgcg	ttggcaggaa	360
ttgtgtacgc	cggctgttat	ctgtgtcgga	gggtggatcc	gtcggccgga	gccggcatta	420
cggcagatgt	gcggacggcc	gaaacatggg	cgtgcgggct	tataccgtgg	ctacggctat	480
taccttcag	ggagtggcag	ctatcggggg	gagcgatggg	tggattcggc	ggacatcatc	540
ggcagatcga	atctttgtcg	gccgagatgg	agcctgccgt	cgccaagacg	gcctgatccg	600
cgactcggac	accctctctc	tcgtagtgga	ttgtttgaaa	aggtttttccc	ctcgattcgg	660
atcgtatggg	atcccgtact	cagagctcgg	ccgacagctc	cgcgggacaa	gcggatcgtt	720
tcaatcttga	agataaacgg	ctttgtcccg	gatagacttc	atcacgccga	atcttcccga	780
agctgccacc	ttttgggctg	cgaaccggac	gatgagaccc	tgttagactt	ctacgaagga	840
gcggtgtcgg	cctcgtcctc	aagggggggc	atgccggaga	atggtcgtaa	cggatcggat	900
cgtttacgac	ggtcgatgcg	aagctctccg	atcttacgcg	gcggtacggg	gaagcatggc	960
acgggttgtg	cccacagcac	gcttttgcag	ctgctttggc	cttggagcaa	gaacctttta	1020
cggctgccgg	atggcacagt	tatatgtcag	tcgactacgt	gagcgtgctt	cggggttgtc	1080
gctatgcaca	aagacctgcc	ggtcgatccg	gtcgtcaggc	tgatgaggaa	atagatttgc	1140
agttcatcac	gcaccgtcag	cccgacctgt	ccgaaccgaa	gaagcggagg	ccgtctgccg	1200
tataggtgtg	cgctgggtac	agcttggatg	aaggaggctt	cggacgaaga	gatgcttcac	1260
acggcttgtg	ccgtaaggct	gtctgccgtc	accacggagc	acttttttgtc	gtcaatgacc	1320
gtgcgaaata	gcccgtcagg	tggatgctga	cggcgtacac	ttgggcaaag	agatatggcg	1380
atagtcgaag	cgcgtcgcat	cctcggttcg	aataagatca	tggacgcaca	tgcaatacga	1440
tggaggatgt	gcgccagca	tatgccgaag	agccgactac	gtgggtatag	gcccgtatcg	1500
ctatacggag	acgaagcagg	tttagctccc	gtcctcggac	tcgaaggcta	caaagccatc	1560
gccgcctgat	gcaagccgaa	ggcatccgac	tgccggcctt	tgccatcggt	gggatatggga	1620
tgcagacatt	cccctcattc	gcgactgtgg	cataggaggt	attgcctgag	cggcagcctt	1680
atcaggaaaa	taaaaagaa	ctaatcggat	gatctccttc	cgtatcgaac	gatcatcttt	1740
tgataaacag	gaaaaaatct	aatgaaacgt	tacaaattgc	cggc		1784

```
 (2) INFORMATION FOR SEQ ID NO:1000

      (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1239 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO
```

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
      (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
      (A) NAME/KEY: misc_feature
      (B) LOCATION 1...1239

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1000

```
naggatcccc gaaattttct cgttttcccg gctccaaaat ttggagcaca ccgttttgcc      60
aagaatgtgc tgacgctctg tcgcacggca aatatcgcaa actgaatccc aaactgcccg     120
agctggaaaa ggctatcgaa atggaggttt ggctctgaat ccgcccgtcg cgaacgagct     180
gacgcctcag gtcataccct cgacgaggaa cgcgacagag cctatcaggc gctgatgtcg     240
cgcgtcgttc gtatgctttc gacgaggaca gccagctgcg caacgcggca gccaaatcga     300
agacgtggcc gctcgctacg gcaacgtgat ccgaatgaac tatacaagga gacggccgcg     360
atagagaatt tcctcaccga tctcaagggc gaaacattcg cccctcgta acgaaactcg     420
gcgtgacggc actcgttgac aactggaaaa gaacaataag gccttcgccg acttcttcct     480
ccgccgtctg gcaccgacca acgaggcaaa tatgacgtga aggcactccg tgccgagacg     540
accgcacatt ggtagccgtg gtgcgccgca tggactccat cgacgacagg agccgagccc     600
ggagatccgt gcgctcatcg agctctacaa ccgactctgg ccaatcgccg cgccctcttg     660
gctcgtcgcg ccagctacgg agaagcgccg tggagaagcg tcgtgccgag atcgccgaga     720
tgctccgccc cctgccgccc ggatcgtgga ggagaagaag acggccgtct ttgccggtcg     780
cacctcggca cgggcaagaa ccgccactat ctcatcacat tcgtagccga gaaggcgacg     840
aggaggatcg ctggtaccgc atcaacgggg agcaactcgt cttgtgcccg aagacgaact     900
ccccaagccg aagaaaaaga agaaacccgc agcagcacgg acactccatc cgagccgccc     960
gtcctgccgg atccatcgca ggaggcagca gtagcggcgg tggcgagcaa ggctctaccg    1020
gcggcggacc tgatcccccc gtgccgtcct gccggccgca gcagcacagg caaccgagat    1080
·aaaagacaaa ggggctgtga ccaaattcat ttttggcaca gcccctttat attcgaaaaa    1140
ttaggtgtta gccctgatta gcctttttct ctgnttcaaa ctatgtctaa agaaaagtct    1200
atgctaggac ttanccaaca accgcttttc ttacttgcg                            1239
```

(2) INFORMATION FOR SEQ ID NO:1001

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 504 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...504

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1001

```
tctaataacg tctgtgtcgc attgataagt tctttaatct catcacaacc cgttctttga      60
agtcgctttc attaaatagt ttagattttg aaaatacaca tttacattgc tttgctgtgc     120
tgaggattta acagcgtcaa gatactttgc aattttatat catcttcatc ggatgagcaa     180
gtttttagca tatctgtact acatcgctaa attcacgcaa gtaattctct gcagattctt     240
cttgcttacc ttcatatcac tctcaaactg ttcggagtcg tttctattgg tattagtagc     300
```

```
tcaaattgtt tgatgtattt agcctttcca ttaaaacgac tagaatagca tctagggtga      360
aggtttttcc tgtagaacgt tttccataca tatattgaga cccgttgata acttttgtcc      420
attcggaaat attggaaaaa gtttattcct tcttccgaag tcagtgatac tttagtctta      480
tccattagac gagtttcagt gttt                                              504
```

(2) INFORMATION FOR SEQ ID NO:1002

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 525 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...525

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1002

```
ggcgaatgtc tctttggttg gacgacaagc agataggggat agccgatagc cgaattccaa      60
gggcgacaca acgctgcgtt tctctgcatc gctctcgcgg ttccaggcac acatcatttg     120
ctgctcaaga gcttgcttct cgaaggcata ccactgctac ggatgtgcgc gtagtcctca     180
agccgaagac cgctcggatt cgtcggctct ctatcccaac tatacgggca aggagcggct     240
gagcccaagc acatgatgag cggcacattt ctatcgggag ggagtctctc tccacgggca     300
agtatgtact tacttcttat cgggtaagca gggataataa gccgctgtga cctataacca     360
gctgcgcgat gccaaaggaa atatcctgct catctgaacg aaaaagaggc ccttggttgg     420
atgccgcatg aagatatgct gtggtgattc gcaaggaagg aaatgcgaag cgtttggtgg     480
ctttcgatcc atggggaaag gtgaaaaaac cttggtgtcc caatt                     525
```

(2) INFORMATION FOR SEQ ID NO:1003

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 1390 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...1390

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1003"

```
ggccgagtgt tcgaacagat ttcggactat gatttgcaat atctcgcgca agggagttct     60
atttcacgac tttggtataa atcttcgatg gcctgttcgc ttttgcttga ccttctttga    120
ttggcagttg tttcaagtat cgttcaaatc ccgtggatca aggccttttt ctttgatggt    180
tgccatgatt tgggtagttc ctctctattc tccaattggg tcaagtagtt gtaggctgct    240
tggtgttgga ttcagcaagt cgtttctcaa aacaggcaat aaaatctcgt attttttgatc   300
ctccggcttg aatgaagtcg gattttgggc ataggcctct aatcttgttt taggttgatt    360
cgtgtggtta ttcccacatc gtgtttcgac catcatttac ggcatattcg aaagcggatc    420
ggatctgctc atcgacttca gacgatgaaa actgtggata ttcaagccga ttttaatagc    480
tgcttttaat catactcgcc taatgttgta atcatacttg taatgtttgt ggattagttc    540
aaatctatag aaaattaagt gtgtggcatg caaaataata tggaaaaagg gtacaaagaa    600
gagggcatgc cgaatcatag cccggacatg ccctcttaac agtaaaggaa atgtagagtg    660
gcagcagagg tattatgtta tagaacgata ccctgccggt tttgtgcttt atccgcattt    720
ggaagctccg caactgtgca tagcaggcag ccttccttga taaaccaatg tctcctgacc    780
gcaatcggac atacctgtcc cgacagggtg gtgccattgg ggaggtaacg tttagggcgc    840
gctccacgcc gttcttccat gtattgatgg attcatcgtt cacgacatgc cctgtacgag    900
atgtaccacc tgctcgatag gcataccgta ggcaagacgc ccgagatgag cttggcatag    960
ttccagtatt cgggattgaa ttgctatcca agccttcgat ggttaccttg aaacctttct   1020
tgttgcagac tggaagtcgt agtgtcgttc gccgttttcg tccctgttct tgattatctg   1080
ccgtgggtaa cgctcttcgg taccatgata ccttcgtcgt catcggcata ccggtgaaga   1140
tttcgtaagg acgtccatcc ttgaggccta cgaaaggatc cactttcac gattgttttg    1200
gaagcgaacg acctctgcct ccagccgcgc ggacgggaga taagcatgct ctgtactgtg   1260
gtttggagag ctgcggctcc tctttcttgg ctttcttctt cggcttgtca gtgataagga   1320
cgcactgcgc gaaccgtcgc gatagacagt acagcctttg cagccgctct tcatgcttcc   1380
acatacaggg                                                          1390
```

(2) INFORMATION FOR SEQ ID NO:1004

    (i) SEQUENCE CHARACTERISTICS:
      (A) LENGTH: 938 base pairs
      (B) TYPE: nucleic acid
      (C) STRANDEDNESS: double
      (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
      (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
      (A) NAME/KEY: misc_feature
      (B) LOCATION 1...938

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1004

```
aggatccccg aaattaggga ttgtaacttc tatatcgtga cagttcctac cccatagatc     60
acaatcacac cccggactta cggccacttt tggcagccgc gaaacaattg gaaaggtaat    120
cggccaagga gatgtggtgg tgtacgaagt acggtgtatc ccggtgtaac agaagacgaa    180
tgtattccga ttatcggaaa gtttcgggtc tcaaatacaa tgtggacttc tttgccggat    240
acagtccgaa cgaatcaatc cgggagataa agttcacaca gtagagaata taaaaaagtg    300
acatccggtt ctactccgga aatagccgac tatgtggata gaagtataat accgtgttgg    360
tcaatggcac acacaaagca tcttccataa aattgcagag gcttcaaaaa tcatagaaaa    420
cgcccaacga gatgtaaaca tgcatttatg aacgaaatcg cgaagatttt caatgcaatg    480
gacattgata gcacgaagta ttggaggctg cagctacaaa atggaacttc ctacctttta    540
gccgggcttg gtcggtgggc attgtatagg ggtagacccc tattatctat tcagcgagca    600
caggtatatg gagtttatcc tcgggtattg atgtctggag aaggctgaat gacagcatgg    660
gctcctatat agcctcgcaa accatcagca aatgaataaa gcaggcatca tggtgaaaga    720
```

```
tgcacgaatt ctgatttagg atttacattc aaagagaatt gtccggatat ccgtaatacc      780
aaaggataga cacgtacagc accctgcaag aatacacgaa aaatattata gtaacgatcc      840
ttgggcaaat ccttctatcg ctgagcaagt atatggaata aaattcacaa tgaattccct      900
aaaggaaaat tcgatgccat tattattgct gggatcct                             938
```

(2) INFORMATION FOR SEQ ID NO:1005

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 656 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

 (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: UNKNOWN

  (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

  (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...656

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1005

```
atttgtggcc aacccgcttt gtatcccaaa caatcctcgt tcttcggagt gatcaagtgt       60
tcttttgtcg gtgaggcaga gaaaatcgca gagctggagt cgtgatgcgg cgcgactatg      120
gagacaaatt gaatatattc cgctctttga aacgctgctt gagtgccttc cgtccgaggt      180
gcagaagata aaagcctatc cgacctcttg gacaagctgg atttgtcacg agaggaactt      240
gtttcgtcgg agacagctac tgcgatgtgg agatgatcca actggccggc ttggtgtggc      300
cgtggcgaat gctcgggaag ccgtcaaagc ctgtgccgac tatttacgac gagcaacgag      360
gagaacggtg tcgcccactt ggtggacaag taatccgaca cgaatatgaa gccgttcctt      420
tctccgtaga agatgtcaat atattgtgcc gggtacgctc atggagagcc ttggtattcg      480
ctgcaccaag tcgcgcgtgg ctatgtcgag gcaacgatgc cggtggatat tcgcactcgc      540
agcctatggg tattttgcat ggaggagcca gcttggcttt tgcagagacc tggccggatt      600
cngtttccgt ggcantctgc aatnccgggg agagataang gtggggattg canggt         656
```

(2) INFORMATION FOR SEQ ID NO:1006

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 619 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

  (ii) MOLECULE TYPE: DNA (genomic)

 (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: UNKNOWN

  (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

  (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...619

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1006

```
aggtttgtac agcctctcga agcggcgatt ctaatccgga ttgttaaaac actaataccaa    60
acgacttcac catgaaagtg tacaagacaa atgaggtgaa aacatctcca ttttgggtag     120
ctccggcgcc ggaaaaacca cccttgcgag gcgatgctct tcgagggtgg agtgataaaa     180
cgtagaggaa gcatagtgca ggcaatacgg tctgcgacta tttccccgta gagaaggagt     240
atggaactct gtattctcta cggttttctc tgtagagtgg caggataaaa agctaatttc     300
atcgactgcc cgggagcgga cgactttatc ggcggtaccg tctggctctg aacgtcacgg     360
actgtgccct cgtagtagtg aatgcgcagt atgcgtggaa gtagggctta tcaatcaatt     420
ccgctatgtg gagcagttgc aaagcctgcc atcttcatca tcaaccagtt ggatcaggac     480
aaggccgact cgactctgct gtatcacagc ttcgggagcg atatggctcc aagatagtgc     540
cgtacagtat cccgtaaatg cgggagcagg gttcaatgcc gtggtcgagt gctgaagatg     600
aaaatgtatc gctggaacc                                                   619
```

(2) INFORMATION FOR SEQ ID NO:1007

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 2208 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...2208

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1007

```
aacatccaaa agagcaggtt gccaagctgg cagagaccgc cttcccactc tttgccgatc     60
ttcccctgac tcaataccaa accttcgagg taccccttcg agcagtcgga cgaccgacat     120
gacgccagac ggagaaggtc tctccggacg tatgatcata ccgtgcagct tggagatggc     180
cagtcgcaga ttggttgttt gttctcttgc atgtacatat ccacatcctt cagccggcgc     240
ataatagcga ccgatgctcc atgaccggat aggaacagcc atgagaattg tctccttcgc     300
tggtaaagcc catttgatcg aagaaaagca gtccgacaac ttgggtgaag aatgaagtat     360
tcgcgtccca atttgcgtct cgctcgctt cgaagatcgg ttgtatgatg cgtatcatat     420
aaggtctgtt tcgattggac tcaaagctaa cgattgtcct ctctccatgc ataatcccat     480
cagaccgaaa atgggcaaat gattctgatt ttgttctatc gatacaaacc atcggttgaa     540
atttacgcac cggagtctct ccgattgcgg ctcgtaaaat tggaaaaatc gaacgagttt     600
tttctcgttt tggcgcgaga attttttact tcccgaacaa aatgaaaaaa ttctcgaacc     660
acatcttttg gccccatgga tgatgttttc cggttcgtaa agagatggca gaaaaaattg     720
ccgagcgaac tgttgataat tggattttgt ttctaccttt gcaatcgcaa aagaacaatg     780
ggcattacca gagtggccaa atggggctga ctgtaactca gctggcttac gcctcggtgg     840
ttcgaatcca tcactgccca ctcttcactt ttgtaaaaac aacgttaagg tcgcggaagt     900
agctcagtcg atagagcatc agccttccaa gtgagggtcg cgggtttgag ccccgtcttc     960
cgctcttatt gaaatcaagg cccggatggt ggaatggtag acacgaagga cttaaaatcc     1020
tttggccata tcggctgtgc gggttcaagt cccgctccgg tacatggtt tcgttttctt      1080
ttctaccgaa gttccatttc gggatagact gcggaagtag ctcagttgta gagcataacc     1140
ttgccaaggt tagggtcgcg ggttcgagtc ccgtctccgc tcaacttcga aagcgataag     1200
ggggcatcta aaattacagg tcttgaattc cccaaagtcg attcgtcttc ttctttcttc     1260
acatccccccc cacaacagag atttttctat ttgcctttgg actgatgctt ttgccattct     1320
cgtttttgcag agaatcctgc acctgaacaa tgcttggcga aàtcgtcggt atgacacaca    1380
```

```
ttgctttcga cggcttctct atctgatcca aaaacttctt ttcaagcctt tttcttgtag        1440
catcatggca catacgactg atgttttta ggatggttgt tttcgaatct ctttaggtat        1500
tactttttgtt ccattggatt tggctcatta agccgggaaa aggagagaaa gggacaaacg      1560
attttctcct caaataccgt taatagatca tgaaggaagc tattncccga aagaacagta       1620
tataaagctc aacggtatat acagattgtc attcattctg ctatgcgcct gctatgctct      1680
caggcagcta tggcacaagg cgtcagggta tcgggtatgt gctcgaccgt ggggaaaagc      1740
cgatcccgtt cgccggagtc aaaggcgtgg tacggggaca ggcgcatcga cgaatctgaa      1800
aggatactac gagttcggat gaaggccacg acggacagca tcacgatcga gttcagctcc      1860
atgggtacca aggggtaagt cgcagctttc cgtctctgac caaggacact cgctgaatgt      1920
tcgtttggca gaggccgaga tggagctttc gagcgtgacg tacaggccac aaaacgcaga      1980
ctcaacacga tggagcgcgt caatacccgg accttcgtgt caatgcaggg cctacgggag      2040
gggtggaatc gctcatcata cctacgcagg agtaacgcag aacaatgaac taagctcgca      2100
atactcgttc gcggaggaag ctacgatgag aatatggtct atgtaaacgg agtggagttt      2160
atcgcccgct gctggttcgc tctgcacagc aggaaggtct gagctcgt                    2208
```

(2) INFORMATION FOR SEQ ID NO:1008

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1013 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1013

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1008

```
gttcaggaaa agaatatcac cttccctacc gatgccaagt tgcataaaag atcgtgcgca        60
agattttgga catcgtccat aagttgaatc ttcctcttgc caaagctata cctttgtttt      120
gaagcggatt tatcgcgacc aacgcttcgc catcatccca agaatcgcaa gaaggcgctg      180
aaggcagaca ataaatgcga acaatagccg gacgattggt tcgagagctc aagcgtaatc      240
ttggaataat tctctctacg ccgaattgat tgagaggttt gaagccattc tttccaaaga      300
cgtaacagcc cccaaaagat ttattccatt catgagccgg aggtcaatgc atcagcaaag      360
gcaaagagca caagaagtac gaattcggca ataggtatcc gtcatacgct cggctacggg      420
tattatcctt gaagcccgat ctttcgaaat gagtatgacg ggcacacgat agaagcttcg      480
ccggaacaag tgaacgactc acacacagaa agatcaaaat accggccggg gacagaggta      540
tcgaggccgg aaagaagtta acggaacccg gattttaata ccggataccc caagcaatca      600
gacagcagac atcagaggtg caagaaacac aaattatctg caagcgagca ggcatagaac      660
ccaccatcgg acacttgaaa tcagatatcg tttaggctgc aacttttaca aaggattggc      720
cggggatgct ataaaatact gttggctgca gctgcttata acttcaaaag agccatgaaa      780
gctcttggga ctttatcaaa ataataagcc agatgccatt tgccaatggt ttccgcttaa      840
agaggttttt taagggacga ctatgtaaga tacaccgtca gaccgagaga ccggattgct      900
ctgaaagaag gcagtcgtaa tctccgaaaa aaatagagct gtgcagaagg gaaatcctcc      960
ctatgcacag ctctattttt cagcatatcc aaactactag tagtttcaga aaa             1013
```

(2) INFORMATION FOR SEQ ID NO:1009

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 846 base pairs

```
        (B)  TYPE: nucleic acid
        (C)  STRANDEDNESS: double
        (D)  TOPOLOGY: circular

   (ii)  MOLECULE TYPE: DNA (genomic)

  (iii)  HYPOTHETICAL: NO

   (iv)  ANTI-SENSE: UNKNOWN

   (vi)  ORIGINAL SOURCE:
        (A)  ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix)  FEATURE:
        (A)  NAME/KEY: misc_feature
        (B)  LOCATION 1...846

   (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:1009

gctgattttc caagatgata ccgcactgtg tttgtggaat gtccccagac aattacaggc      60
ttacgacgaa ctgttatcgt atttccgttt ttcagtgtat gatggagtag tccacttcac     120
gttgcctgtc atatttcatg tttttccatta ccggtgaata tcgatatgat ttttatcgaa    180
ggccatgaac tccgaacatg tcggctgtga tgacagcccg tgcagagatt gaaaaacgat     240
cgtagcgtac gacgccttcc tgcacggtgc aggagaccag cgtaggccta cggtctcatt     300
acaacatgct aattatcagt gcattatggc caattaaagt aaacgagaac gaccttagaa     360
attttccctg ttttgcgtct tcaaaattcg ttcccccctt gtttgggaag ttcagactca     420
atagcagatc gacgacctcg atccccttgt cgtatttgaa gcatcatttc ttataataga     480
aagaagacac tgaagatggt gatgatgtca tttttcagta cacatcgcct tttctttatt     540
ttgtagagca tggtttcgaa tttgggaccg gctttttgaaa tcagatactc taagaaacgt    600
ttcaaagaac tatgttattc gaatcgatta cccctgtcaa tggtggctga tagcaggtat     660
cctgctcttt gtttttgaga tttttacccg ggtttcttct tggcttgttt cggtatggga     720
gctttttgctg ccatttaccg gcggccttgg ggttgtctat tgtgtggcag accgtttttt    780
ttatgtggct tcgctgctct cgctcttcct gctcagacct tttatgcaga agaggcgcag     840
aaggct                                                              846


(2)  INFORMATION FOR SEQ ID NO:1010

     (i)  SEQUENCE CHARACTERISTICS:
        (A)  LENGTH: 558 base pairs
        (B)  TYPE: nucleic acid
        (C)  STRANDEDNESS: double
        (D)  TOPOLOGY: circular

   (ii)  MOLECULE TYPE: DNA (genomic)

  (iii)  HYPOTHETICAL: NO

   (iv)  ANTI-SENSE: UNKNOWN

   (vi)  ORIGINAL SOURCE:
        (A)  ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix)  FEATURE:
        (A)  NAME/KEY: misc_feature
        (B)  LOCATION 1...558

   (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:1010

tggaggactt taacttcgat gctcccaaaa caaaggcttt caaggctatt ctgccgcatt      60
gaaggtgggc gaaaagaaag tactctacgt ccttcccggg tgaataagaa tgtgtacttg     120
tctgctcgca acctgccgaa tacgaattga ttcttgccaa tttgatcaat acttacacag     180
```

```
tgttggcttc caagaactcg tgctgacaga gcgttctgtt gccgttgtta atgaactatt        240
taaagataag gaggatttgg tatatgggaa tcatcattaa gccgattatt tcggaaagat        300
gacggctgtt acggaaaaga tgtcggagcg ttatggcttc cgctttctcc taacgcgaat        360
aaaatagaga ttaagaaggc tgtagaggct attataatgt gaaagtcgaa gacgtgaaca        420
cgatgagata tgacggtaag ctaaaaccgt ataccaagag tggactgatt cgcggtaaaa        480
agcttctttc aaaaggcgat tgtgacgctt aagaaaggag aaacgatcga cttcttcaga        540
tatctaagaa aaatgggga                                                      558
```

(2) INFORMATION FOR SEQ ID NO:1011

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 669 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...669

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1011

```
cgaggaaatg aaagctcggc cggcagcgtg ggcaagatcc gcgaatgtgc gccttactgc         60
tcaaatactg caagactacg ggtatcccgt catcgtcacg gacacatcac caaagaaggt        120
agcatagccg gaccgaaggt gctggagata tagtggatac ggtgcttctc ttcgacgggg        180
ataagcatca tctctacgga tactccgagg acagaagaac cgctatggca gtacttccga        240
gctgggatat acgagatgcg gcaggacggt ctgcgtggcg tggagaatcc gagcaacatc        300
tcatcacacg caatagggaa gacctcagtg gcatagccat agcgtagcga tggagggcat        360
tcgcccgata ctcatcgaag cgcaggcttt ggcagctcgg ccatttatgc caatccgcag        420
cgttcggcca cgggcttcga tttcggcgga tgaacatgct cttagccgta ctggagaaac        480
gtgccggctt aagctcatac agaaggatgt gtttctgaac attgccggag gtatcaaaaa        540
gccgatccgg ctacggatct ggccgttatc tcggcagtgc tggcgtcggt ctggacatcg        600
ttatcccgcc ggccgtatgc atgacgggcg aagtcggctc tccgganana tacgtcccgt        660
gagccgcat                                                                 669
```

(2) INFORMATION FOR SEQ ID NO:1012

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 593 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

```
(ix) FEATURE:
     (A) NAME/KEY: misc_feature
     (B) LOCATION 1...593

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1012

tgcgtgatca gtttcatatt gcggggaaag agtgtggagc cggccggacc tgtatgcgca      60
aagggagttc tatttcacga ctttggtata aatcttcgtg gcctgttccg cttttgcttg     120
accttctttg attggcagtt gtttcaatat cgttcaatat cccgtggatc aaggcctttt     180
tctttgatgg ttgccagatt tgggtatgtt cctctctatt ctccaattgg gtcaagtagt     240
tgtagctgct tggtgtttgg attcagcaag tcgtttctca aaacaggcaa taaatctcgt     300
atttcttgat cctccggctt gaatgaagtc ggattttggg catggcctct aatgcttgtt     360
ttaggttgat tcgtgtggtt attcccacat cggtttcgac caatcattta cggcatattc     420
gaaagcggat cggatctgct ctcgacttca gaacgatgaa aactgtggat attcaagccg     480
attttaatag tgcttttaat gcatactcgc ctaatgttgt aatcatactt gtaatgtttt     540
ggattagttg caaatctata gaaaattaag tgtgtggcat gcaaaatata tgg           593


(2) INFORMATION FOR SEQ ID NO:1013

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 713 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...713

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1013

ttttcttcgt aactttcttg tcacttggca tcgagggcgt tcgccgatga gctgcgcagc      60
ttggcattgt cgcaaaacga atccgctaca gccggctcga attcagccac ggatttggca     120
tgcaattcgg caatagcctt tagctgtcgg gggtagcttt ccacatccct ttgcgtgcgg     180
tctccatcat tacggcgtga attcctgcaa agcggcaggg ttgttttcgc ggaaaaattc     240
gtggagccga gattcttctc atccttcaca taagtagcgt agatgtcatc ccacattcct     300
tgtcgatggc cgaaggcttc atgacattcc agccgtaggt attcggatag tttcggcaat     360
gccgttggca gcattctgtc cctctttgag ctctcttgga tataagtagg attgaggatc     420
gtggttctgg cttcgacgcc gtggcttgtt tcagctcttg cacgcgcgtc ttgtggcgat     480
tgcgcaggtc ttgaagtatg cttccggatc tttgcccgtc acttggcgga cagagagcgg     540
aggcctccca tgaattcata gacgtggtcg aggctcaagg ctccccacta ttgctttggc     600
caggttgtac cacggcatca cattctgcaa gctgcttgaa cataccttgc tggaaatctc     660
ccagcgacct tgcataccgt agatgcccca tgtgtgaggt aacatctgca tct           713


(2) INFORMATION FOR SEQ ID NO:1014

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 508 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
```

```
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...508

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1014

ggctcttcgc gagctggccg acttcctgat cgacatccat tctcagcaca aaatctcctg        60
ctcggcgaca gtttgtttca gctcaatgtg ctggatgcta tagcggaaaa cccgacttat       120
atgcccacta cagcaaagct taccgggggta tgccgaaaga aaacaaaagt tggaagacct       180
tcgtaaggca gccgctcgac agcgtcggag tatgactatt ggcagtttcg ttttgagcag       240
ttggaaaggc cggtctcgaa tcgggagaag aagctcgttt gcaagaagaa caggtatgct       300
gacgcatgcc ttggacatta aaagagagct ggggcattcc tatgccttct ctccgacgat       360
gagagaggac tactgtcggg tctgaacaaa gtgaagatgc tttggccacc atagagagct       420
attatcccga ctcggcttct ttcggcagcg agtacgcgat gttcgaatag agttggctga       480
tattgcatcg atttgggcgg cgttcgga                                          508


(2) INFORMATION FOR SEQ ID NO:1015

       (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 655 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: double
           (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
           (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
           (A) NAME/KEY: misc_feature
           (B) LOCATION 1...655

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1015

ccttgatctc aacatcatcg aggttgatcc agaagaagtc cgtacagcca agtgacggaa        60
ggcaacatac ttagtacccg caggcaactg taccgtcttt gataccaggt gccctgaaca       120
cgagtgccac gaatggcttc cggtgcctaa caactgtctt ggccgtcagc acttcttcca       180
acaaagcgtt ggcgaattgg aagcgtcgtt acccgtagaa gatgcataca cggcatagtg       240
ctctgtgcat aattggcatc ttgtgcacat acccagaaag taagcgttcc tccgtaggaa       300
gagaaagctc cggtgtaacc agatagttat cagggttctg aggccttcaa agttgatata       360
agaagccgaa gagacacaga ttgcactgtt gtacctgcaa aagaggagcc tccgggagga       420
ggggtcgtcg tccaattgtt gcgtcaccgt ctgcatcgat cgtcttccat gaggcaggaa       480
taccattttc aatgattcgg aaagtgttgt tgttcccgga ttcggattcg gggtaccata       540
ggtgcatccc acttgagcgt tactttctgg ccgactgcac taccggtcgg ttctgtcagg       600
agcaaattca ttggatcctt ctaccgtaac gtctttaata cāttcggaga tacgc           655
```

(2) INFORMATION FOR SEQ ID NO:1016

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 521 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...521

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1016

```
tttgctttc  cgtgtgaacg  tttctttttc  gaccggaaaa  agttccacct  ttcaatcacc    60
gtcaaacctc  tccgtaccga  ttcttcgaaa  gaaatggatg  ggaagaattt  ttcctcaaac   120
cgggattggg  ataagggccg  atcggctgct  ggcatctcta  tagtaagcga  acacttgacc   180
atacgaatac  atacctgacc  tctaagagca  tcacgtgggt  gaaagattct  tctctgcctg   240
ccgagttgct  ttcccatgcg  taaccgtgtg  gatggtcatt  ggctgtacct  ctgctgagaa   300
atgagtaact  ccgcttatgt  ttccgttata  ggaccataca  gctcttctcc  gttggttgca   360
tcggcatttt  cacgtgtgta  tacagtcgcg  ccgcatatcg  ttgcgggttg  ttggcaaaga   420
aggcgtccca  actgctccat  aattaggatc  gccatagtaa  ggccctacca  actcggggtt   480
tgcatagctc  catagatgct  tccccacgtc  cagncgtatg  t                        521
```

(2) INFORMATION FOR SEQ ID NO:1017

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 711 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...711

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1017

```
ttgacggcaa  acatgccgta  gctctcgcga  tagttcttcg  tgatccagaa  gcatactgct    60
tggccactcc  gtatggcgat  cgggggtaaa  acggagtgtc  tcccgttggg  gcacttcctg   120
caccttgccg  aacagctcgg  atgtagagct  tgatagatcc  gtgtttcctt  ctccaatccg   180
```

```
agtattcgca ccgcttcaag aggcgaagcg tacccacggc atcggcttct gccgtgtact      240
ccggacgtcg aacgacacct tgacgtggct ttgagcggcc agattgtata tttcgagggg      300
cgagtggtct gaatgatgcg taccaaagag gagctgtccg tcagtccccg tagtgcagat      360
tgatcagccg ctcgcgcttc atgtcccgca ccattcgtcg agatagaggt gttcgattcg      420
tcccgtattg aacgaagacg acggcgcagg ataccgtgca cttcgtaccc cttttctatc      480
agaaactcgg gaggaaagag ccgtcctgcc ctgtaattcc tgtgattaat gccactttct      540
tttcataatc ggaaagaccg gattcctaat cttgaccggc tcaagcaata atatgattcc      600
ctgcaaaagt actcattcct cccacgataa tgcaggagct ttgttttttcc tccgaaatga      660
cagtagaggg ctgcctttgc tgagaccta angggatccc catcgagact c               711
```

(2) INFORMATION FOR SEQ ID NO:1018

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 1896 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1896

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1018

```
tcgagttgtc gaagcattcg atatgtttcg gcggacgatc caagtgcaat ccttttggat       60
cccgtggacg atatgtaggg cgcgttgctc gggattgact tctcggcacg tttgagtttg      120
tcgagcttgt attgagctac gttcttccgg ataattccag cagtttccgt ttgtctccac      180
gtcggggggat cgtagtgtga tgctctctcc cgtttgccaa ccggtgtcga acggcaaaac     240
gatttgtgag cgttgctttc gaatctttgt ctcagctctg ttatcgccgc tgcagaagtt      300
cttctttcga ttcctctatc tgctttctgt actccaaggt gtaacacgat tgatccctcc      360
gtgctctatg tgcatgtagt tgatataggc cggtgctcgt cttcgtcgta agagaaaaca      420
tctacgttgt ctatattacg cgtacgaccg tgtgcttggc ttcgtatcgc tcaagaagct      480
ctattctctc ttgcatatct gtgcctcttc gaagcgcagt ccttcgctgt atacctgcac      540
ctgtcgcgat acatgcgtac aagcctgtgc aagttgcctc ggagcagacg cgtatttccg      600
atacattgct ttcgtactcg ttcgaagttt gattgccatg caggggcctt tgcatttctt      660
gatgtgatac tgcaggcaga cgcggtccgt ccttgtcgga ttttctcctc tctcagatcc      720
agtttgcagg tacngtcgga tagatctctt gtcacaaggc ggagcatccc tttggcaatg      780
agtggcccgg atagggggccg aagtattcgg atccgtcctt tttgatgtcc cgttggcgaa      840
tatacgtggg aaaggttccc gtttgatcac tatgctgggg tagtcttccc atctttgagg      900
aggacattat accgaggttg atactctttg acagtgagtt ttcgagcagc agggcatccc      960
cttcgctgtc cacaactatg atttgatgct cctgatctgt ctgaccagta tgcgggtttt     1020
cctgtctgct gctccttgta aaaatacgaa ctgaccctgc gccgaaggtt tttggcctgc     1080
ctacatagat taccttccca tcttcatcga agtactggta gcaacccgtt tttccggcag     1140
ggtggggagg atgatgttca gttcgtcggg ggtcatattc ggttcgatat tttgtttcac     1200
gtgaaacgtt atcttccgca gagtagagaa ggatgcttac gtcgtgggga gagactcccg     1260
gtattcgaga tgctgcgcga tggtttccgg ccggatgctc gtcagttttt ggcgtgcttc     1320
ggtgagaggg actgcatctg catataatct acatgctgcg gaagtcggat acttcgagtc     1380
tgttgatctt gtcggccaag gctctttctc ttttgatata gcgtcgtatt tgatcaggat     1440
ctctgcagct tccacgattt cctctcgtct gatgccggga tctcttccac gattctttgg     1500
agagagggca ccatcgaacg acttcattca ttcctatttg aggacggagc agcaggtcgt     1560
acagtttgtt ccttgcttga gaggaaggtg gccggccgac tccagatgcg ggttgataga     1620
tccggtttga gggaaaactt gtgcgtaaag tcgatcagct tatcgcaaat acttgctttt     1680
```

```
ctcggagcaa ttcgctgcgt ctgctgtctg ccagccgatc gcttccgcct tcggtgtgag      1740
cctcatgtcg gcatcgtcct gacgagcaag atgcgatatt cggctcggga tgtaaacatg      1800
cggtagggct cgtcacgccc tttgcttcac caagtcatcg atcagtaccc tatgtaagcc      1860
tctcccgtcc gagtgtgaac tcgctgcgca tggcat                               1896
```

(2) INFORMATION FOR SEQ ID NO:1019

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 412 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...412

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1019

```
gggcattacc tgctggcagg aaccatacac gtcgcagtta ccgtaataac accgaaagca        60
cctacggaag atataatcat attgtatcgg gcctgactga tggctttgtc aaccttaggc       120
gcgcatcgtt gaaccacatc tgctccaggg aggaacgtag aaataggatt cgccgaagaa       180
tttcactttt ttgcttcttt ttcttccaga aagaattctg ctatacctgt cgtgtacgct       240
gtaaatagtt gatcgtacct gtgttcggag aatcgacatc cacggaataa ccggtatcgg       300
acattgtgaa ttcaggatat aaccatcctg aggacattaa ccaaccttgt ctcccgtcgt       360
agtagaggca taataactgc tgtatgcccg gaaaccagat agtattctcc gg               412
```

(2) INFORMATION FOR SEQ ID NO:1020

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 547 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...547

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1020

```
ggcttgccag tcgtcatcgc actgaatatg ttcgatgagt tcgagaaaaa ggcgacacct        60
```

```
ttgactatcc tgccctgtcc gccatgctcg gtatcccctg gttccgacgg tgggacgaac      120
gggacaaggc ctgccggaac ttttcgaacg cttatctcca ttcatgaagg acgaaacaaa      180
atcatacgtc ccattctatc aactatggca gcatcataga accggccgta gaagctctga      240
ctgagaaata aacaatcagc tctctctacc ctattctctt ccggcacgct atatgcagtc      300
aagctgctgg aaggcgataa ggagatgaat cgcttcgtag gcgacagccc aaaggtcttt      360
tcatcctttc ggcccgggac ttcgctctac ggagatcgac gaacatctga cagtggcgag      420
agatgccgaa agcattatca cgatcagcga tatggattca tcgcaggagc cctcaaagaa      480
acataccgga cagctacaaa cagctcaaga ccctgaccga tagatcgatc atatcgtcac      540
catcgcg                                                                547
```

(2) INFORMATION FOR SEQ ID NO:1021

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 590 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...590

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1021

```
ggcaaaatca ggataatcga cgctttcgga agagtggcat ccgaagtctt tgtcgtgatg       60
ccttgctctg caagccatgc ctttacgcgt tctttcaatc atatccggcg tggtcgctac      120
aaataccgat tgtttccatt gtctgagtgt agtttgtaaa tacagattgc ccgaaagcta      180
tattccgatt tggaagcgct ttcgggcatc ccgtggttgg ttatcagtgg agtattttca      240
acactgttcg tacacattct ctgccgtaaa gccgagtttc tcgtccagca cctttaggga      300
gcggagaatc cgaaagagtt caatccccag acggcaccgc tttacccaca aggccttcca      360
ggttgacggg caatccggct gtcaggccga aagcctgata ccgatgggaa gcacttcctc      420
ctgatactcg gcactctgcg acggaaaagt ccttcggaag gtaccgacac gatacgaagt      480
tttacaccgc tttgcgcagc agctctgcac cctcgaccaa tgtggacacc tcagatccgt      540
ggccaggaga actacttcga tattctgatc cgtattgacg atataagccc                 590
```

(2) INFORMATION FOR SEQ ID NO:1022

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 555 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

```
    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...555

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1022

gaaacttact tggccaactg tcgcatagct aaagacaata tcgctgtaaa tctgtagcag        60
atcagatcaa aatgctgacc aaagagcaaa aagaagagtg aaaaaattcc tctaaacatc       120
ttttttcccctt atttcgtttt caggagcgat attatccgaa tcggaatagg gttactccaa     180
taggcaaggc tgtccggtat aaaaacttcg gcagcctttc ttttttaggc aagaggagct       240
aaggaaatag ttggtttctg gaccaaagat ccggtatcta attattgctg tccgtgaact       300
tggaggtcgt gcgtgtcagc gaatatcttt cattggaatt tgtggcctga aaatagagat       360
tcgcctccta taccaactcg tttcgacaaa gatgcagtga aaaggaaatg gatcggcatg       420
gttctgtatc gatagggtaa atatccgcta tctttggtct aatgatgata gccacaaacc       480
aaggatacag gagttcggcg actacctcgg caggtatttc cacactataa agtccagaaa       540
taccctcatg cagct                                                        555


(2) INFORMATION FOR SEQ ID NO:1023

    (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 977 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...977

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1023

aaggcggtta cgaagaactt gaccggggta gaactttttt acccgacggg cccgcctctt        60
ggatcgttcg ggcttcgtgt atggcggcgc cgtgcatcgt cgatggagct ttttctgacg       120
gacagtctct tgctgctcgt caaagctagg gacgcttgtg tttcggatcg gatgtgaatc       180
tctttcgtcc cgctcttcgg cgggatttcg tataaacctc taaaccaatg aaacgatgaa       240
aagaaatgga tcgatgcgct gtgggtgatg ggagtattgc tcatggccgg gtttgtttat       300
ctgcttgtaa tcgggagctg gacgtgcaga cggttttttcc gttgaagtaa gcacgatgcc      360
ggttcccaaa caaatcaaac agggcgaaac cgggaagtgc gctgttccct cgtttcggaa       420
ggcgattttt ccggaacgtg catacaatgc gattttttca aacggagggg aaaggtgttt      480
tgcggatcgg cgcgggggttg ctctcaaacc caatgactgt tatccggtgg gtaagggagc     540
ttccgcctct actatacctc gcaaagcaaa gagcggcagt cgctcgaatc gtcttcgagg       600
acaatcatgg acaatcgcaa acgatcgttc tggatttaat cacaaagaat cggacgagga       660
taaagagcga gaagccggtt accgcactga cggctccaat aattcctttt ttgttcttaa       720
tcaagagaag gcgccgtccg agaggatagg cgctttccgt tttccggaaa agcgtaaatc       780
aggaaccgga ttgcacctta taatcttcca tccggagctg cttctccttc attattctcc       840
attgggaaac gttatttcga acgttacttc atcatattcg taaatgccgt ggatggaatt      900
acatatacgg cttccggtgc attacgggac ctccgaaacc gaaaagataa aacagatgct      960
tgacaggtat cttgctt                                                      977


(2) INFORMATION FOR SEQ ID NO:1024
```

(i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 563 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...563

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1024

gccagaacgt tccatccggg gatgaaacac gtatggctgt gccatctgac aaggacaaca   60
accaccccga cctgtgctgg aaatccatcg aatatcgctg ttcagtgagg ggattcgtgt   120
cggaaaaagat atggaactca ccgtactaag cgtacatccc cctcatctct atatactctt   180
ttagaggact gacctaagag actccccctt ctcgcacttc atatactgcg gcaaataagt   240
accctcccat aactgtgatt gttacaggag aagggtgacg gataagatta taggattcct   300
ttttcagcgt ctccatccga aaggatgaga ggccaggggc aaagtgcaag ggggtggtat   360
tcgcccttca gtcctacggg agaagcattg cgatgtcatg aacgatctga atgctgttgc   420
gagcttcgtc caaaccgaaa cttcaccggc caaaatccgc cgataactct cggtgtgcaa   480
cttccgtaaa ccttcactga actcgaatga ttcgccgtcg attctatcga cgaaaggtcc   540
ttctctcctg tacgcattct cgg   563

(2) INFORMATION FOR SEQ ID NO:1025

       (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 580 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...580

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1025

gaatctttct atctttaact caataagaat cagattggaa caatgactag atgcagtggg   60
agcgattgct ctccgacaaa agggtgggca tggagcacac caccaaccga aacaatcggc   120
tcagccatgg gagagaacgg acttcgacga gattatgacc gcatggtctt ttcttcacct   180
tttcgccgac tgcaaacaag gcacaggtat tcccccttgc aggcaatata ttcgtacaca   240
atcgtttacg cacagtctcg aagtgagctg tgtgggacgc tcgctcggca ataaatcaca   300

```
cgcggactga aagcgcggta tggcgaattg ccatgggagt cggggccatc agtgccatcg    360
tgtcggctgc ctgtctggct cacgacatgg gcatcctcct ttcggtcaca gcggcgagcg    420
tgccatttcg gcttatttcc ggaaggaaag ggtagggtat gggaggacgc agtccgcaag    480
gaaggaggtc ctgggaagac ttcctgcact tcgaaggcaa tgcaaacgct ttccgtctgt    540
gacgcatcag ttcgaagccg tcgaaagagc ttgccttacg                          580
```

(2) INFORMATION FOR SEQ ID NO:1026

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 576 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...576

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1026

```
ggcaagagcg aataagaggc aatcacctct atttattccg atgtattgaa caaaaacttt     60
ctatttctta tgattttctg ttacggagag taccgatcgt tctctcaaag gcttggttgt    120
gatctcatca agacccaatt cgtcaaggcc ttttcggcca aaccgttgtg ataatcgatc    180
agatcttcca cgatcgacga atccccagac gattataaat acctgtcaca gctcggatct    240
tttctcacac tgcacatccg gcatcaaaag ggattctctg aggagattca attctctccc    300
tgagccatct caagggcttt gatcagaagc atcgtctttt tatacaagct atatcatcgc    360
cgattttctt gccgaggata atgggatcgc caatacatcg aggaggtcgt cctccaattg    420
gaaagacaag ccgatatgta tccgtagcga tagagaatat ctgctttctc aatatccgct    480
cctccggcta agcccccatc ttaaggctgt agccaagaga actgctgtct tcaaacgaac    540
atcttcaggt actcgtcctc ggcaacaaag tcccgc                             576
```

(2) INFORMATION FOR SEQ ID NO:1027

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 566 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...566

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1027

```
gtcttcttga taaaaatcac aaaaaaaaga tttggccgac atttgaaagg attgtttttt      60
ggaaaaagta caaactaatg aggttattcc aatattccgg atgacaccaa gttcccaggt     120
atacctaatg acattgcttg cattcgtatg aagagaagca ggaagataag aagcgatctg     180
aaagagtgca gcgagaataa ttgaaagaat aatttctaag gttcaatagt taattataga     240
aagggagtt attattttaa tagatttat attgttgtat ttgttgtcgt aagggatgca     300
aatatttata ataatagctt ttttatagca tgatagtttt cctattaaag ctgcgcagtt     360
gatcctcgca ttcgccattc tggttttcgt cctgaattgg gacattactt ttttgctcgt     420
ctcttccgag tcagggtgga cagttctacc ttttcttcga ttggggaggt gccatcttcc     480
gttcaagccc aacggagcga aacggaattc ggatcggtgg cttcctctcg tggctattga     540
gatcacggga tgatagacga atccat                                         566
```


(2) INFORMATION FOR SEQ ID NO:1028

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1013 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1013

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1028

```
tcagggattc ggcagcgatc ggaccgatcc tcggatgtac tcctctccaa caaaagtaat      60
atatcccgta ctaagccctc ccatttcgct cttgatagat cgatacgatg aaagagatgc     120
gtgcgcatgc aaggagttgg tgtcgctctc cccgagcttg atctccggat agcaggggct     180
taagaaaagg aaacggtgag atcgtgaaag atgaaacacg aaccaaaaaa cgccgggttg     240
cggttgtatt ttctgaaaaa gtggcgtgag atctttttcg ctgtggcgcg taaattttta     300
cttcccgaac caaaacgaaa aaattctcgc gccacgtttt tggagcatgg aatgagaaaa     360
ttttgggctg taaactcccg aacgatgaat aagtgatctg tgccgaaaaa cttcctgtga     420
gcaggggggc gaaagattgg gtctccgcac agagcgaata agagaggggc tgaaagccac     480
tgcggatctc gcccctctct ccttatgata gtattcgtca ggcgtctctt tattcgagct     540
atgtgcgaca gtgaagtgtc agacgatagc cgctacaatg gttgctgctc cgccggcaac     600
atttgctgct ctcccgtcag catgtttttc agattcattg cccggccgct cgttcgtttt     660
ctccgacgag tgccacgtat ggaatgtggc tgcattggca tagctcatct gtttcttgat     720
cttggcaggt tcgggtacag ctctgtgcga aggccttgct ccctgagctt ttggatcagc     780
gggacaggct gtcggcatcc tcttcgctga aattgacaaa gagcagctgc gtacggtcag     840
cttctcggca gggaagaggt cgagctgcat catcacatca taatacggtc tgcaccgaaa     900
gaaatgccca caccggacat tccctccaga cgaatatgcc ggtgaggttg tcgtagcgac     960
caccgccggt aatgctgccc tctcggcgtc gagtgctttc acttcgagaa tgg          1013
```


(2) INFORMATION FOR SEQ ID NO:1029

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 796 base pairs
            (B) TYPE: nucleic acid

```
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...796

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1029

tgcatcaggg taaagaaatt gccgagcaga tcaacatcct cggtgatgag gtgtacccgt      60
tagctaccac gtagtcttct ggaaagcaga attgatcgct ttgtgatcct tcagcaagat     120
gctttcgacg atgtcgattg caacagccgc tcgagcgtca ggagctgatg ctcagcagaa     180
taacggacat ctgtcgacgg aattcgattt cgaagacttc ctcgaggttt cggactattt     240
caagcaatga tcaatacctt caagcaggtg aactattctc agttcaaaag tgctaatttg     300
acaaatacaa taaagagttg gacgctattc tggccgaacg cataaataaa'ttaagatagt     360
tatgtcaaaa caaagctttt cagaaaatat atcgaagatt accaatatca ccaaggcaac     420
ctgctctttg cgtgccaccg ggtgggtaat gaagagttgg ccactatcga cggccgattg     480
gctcaagtgg gcgtattcag ggcgaagatg taaccctgca ggtatttgcc ggtacggagg     540
gattcccacc gatgccgaag taatcttcat gggcaaggct ccctcgctaa agtgggagat     600
cagttggccg gccgtttctt caacgcttat ggcgaactat cgacggaggc ccccaaccgg     660
aaggaaaaga agtggagatc ggcggtcgtc cgttaatccg gtccgtcgta agcagccttc     720
agagctgatc gctacggtat cgccggtatc gacctgaaca atactttggt gacgggacag     780
aagatccttt cttngg                                                     796


(2) INFORMATION FOR SEQ ID NO:1030

       (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 970 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...970

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1030

agcgtggccc gaatgctccc atcagaatac cgatgatgat agggccgccg ctaatcccag      60
cttgataggc atactgacac cgggcagata gaaggggaca tgccgaaaac acatcccaag     120
acaaggcctc cgaacaaagt ggtcaaagag gattgtccaa ctgtttgacc tcatcaccca     180
aaatctcggc cacacgtcta cagccttgcc ttcgccaacg acggtcaggc ggtcgcccaa     240
ctgcagcgaa gatctctatc cggcagcaat tctactccgg ccctgtccac'acgatgatat     300
```

```
tgaccccata caggttgcgg attttcagca tgccgaggcg tacccgttga gcttagggcg      360
agttattacc agcctgcgtg atacgagctg ttgtccacac tgttccagtc tatatcggga      420
cggttccaat ccttcatttc ttcttgccga agagtatttc gagctgtgag gtatcctctt      480
caccggagac gcgaggatgt gatcgccgaa atagaggatc atatcagagg tagggatctg      540
actttaccgt tgtgccagac ccgtgtaatg acgaaagggc gcttgagcgg agtgctactt      600
cgcgaacgct tttgccatcc aaagcaggat tgcagattca tactcggaga agaaagcttt      660
gggagcctcg gaatcgtctc gttcctgacc ttgggcatca taactttcag cagggccaaa      720
gcaataataa caccccaacg cccaaaggat aggtaacggc acaggccaga ccttttttcgc     780
ctattcggcc gtggcatcgg gattgatctg atggagggtc gtttgggctg caccaaagca      840
ggggtattgg tagtggcacc ggccacgata cccatcagat tggcatggaa atgccaagga      900
tataataaag gaggatgcac aggagaaatg tagtaggact aatcccaagg agataagatc      960
tggcaatgcc                                                            970


(2) INFORMATION FOR SEQ ID NO:1031

       (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 817 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: double
           (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
           (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
           (A) NAME/KEY: misc_feature
           (B) LOCATION 1...817

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1031

gtcgtacaat tcctgaaaat agtcggaagc atagtagata ttgccccagg gaagccaagc      60
cattctatat cttctctgat ggcatccacg tactccactc ctctttcacc ggattggtat      120
cgtcgaagcg caggttgcag acgccccgta tcgctgagct atcccgaagt ctatgcagat      180
agctttggca tggccgtatg gagataagcc gttgggttcc ggagggaaac gtgtctggat      240
tcgacgtcat tcttcccttc ggacaggtct gattccacaa tttgttcgat gaagtaagac      300
tcttcttttc ctctatgccg ctgttcttat tttcgttcat atcatccgtc ttgcttgtcc      360
ttatttacat tagtgaacaa aggtaatgat atgggacata aaataatcac ggggcaatcc      420
gctcaagcag gagccaatgc cagtttgtct gtttggtacc ttgaatgatt gtgtatgaca      480
acgaaacggc taaggacgat tatgacggag tgtcatcatg cgcaaattac tgcgttgctg      540
cgacattcgg cttcagtcgc gtacttgtaa gttcgctcct ttctacctag tcttagtacc      600
ttgtacttta cacattcttg cacacccaaa aggggctcga caaaaccgaa ttttgacaca      660
gccccaaacg aatcagcgtt caacgggaga gacctttata tccgcgcgct aaatcatttt      720
tccttctttc ggctagcttt ctaaacagcc ccttcttggg cataggcctg ttcattctcc      780
tctcgatgaa cctgggatcc tgaatcacaa tagcgtt                              817


(2) INFORMATION FOR SEQ ID NO:1032

       (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 1137 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: double
           (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)
```

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...1137

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1032

```
tatcaattct tcccgaatct attcataact tcacaagcca atcgattttc ccttttttgca    60
acggcaagca aacggttagt tcatgagcca ggcctgtccc cgaatcagtt cggctgtgat   120
ttgtttccca ttgagtgtta catatatcca ttgccgaaag tcaggtggca tgccacggtc   180
tgttctctat ccgataaata tcctgcacca gcagacagga gctaatctct ccccaaggct   240
ttttcccact tgtcctacag gcatttcttc ccaccctttg gttaagggta gaggatggag   300
tcgcctcgaa ggatattgtc tggaatcata ccgaataccc caccacttgc cgaacatagg   360
gtttgcccca tgacaagccg tcgtgcgaaa tcatacttcc tctgatttgc ctccttccaa   420
tgtaatttct cgttcctccc tccgacagaa agccgtagtg tcttgccggc ttccatgtcc   480
gtatatataa agcacgcgga gcagaaaccg cttgccactt catgcccgtt atactcttga   540
gcccgtatag tagtcccagc agctatggcc gtatatccga gagctattgc catatgcagg   600
ggatagcctt gaggtcggcc tgcgagtaca aaatcgttct gtcaaaagcc aaagccagca   660
caagaaaaga ctcaggcata cttgcagcat tcggatacga accccgtct tgcgaatgtc     720
catattgagc ggtgagcgtt ggtcaaattg ctcacctcct ccaaaaattc tccattcacc   780
ggaagaatac ctccttgccg gccatatccg gacgaacaaa cagataaagc atgaatcacg   840
aaccgaaact tcgccaaagg gcaagagttc aggaaaagga gacgttccgt accgtaaata   900
ccttctccat acatatcgag aaattcgccc aggttcgcag cacttcggat tcataaggca   960
atatggagcc attgccttca gaccgatgtt cagcagataa ttacccccac gacacaccac  1020
tcgcaccaat cttcgaactt ctcgcgagct ttgtcccgaa tagagcctct ctcctgcctg  1080
agcgatagcc ccatgtctca gggaacatag atgccgccgt ctgccaagat ggcaatc     1137
```

(2) INFORMATION FOR SEQ ID NO:1033

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 960 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...960

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1033

```
acgcgagtta ttacctctcc gaagcaaggc tgtacataat cgaattgagt gtaatacagc    60
agttgccaat agctaagaag tatttgtcct tattagtggt gctttcagtt gagaagtagt   120
cagaagtgga tcagcccatg cggtctcgat ccatgcgctg tatagtttgc aaagctgact   180
ccggtattca aatgacgtag caacctgtat aaggggcttt gagatagttg tacacgtcgg   240
```

```
tataacatgc tcttggttgt agtagtactg cataccgtat ttaatggttg gctgcctacc     300
tgggaattcc agctataatc tgcacctgca atcaagagaa cttctccaaa taactcttat     360
ctggcatagt agccttttca tacatcaata cctatcaatg atgttcgtca gttcttctgg     420
ggaagaagca gacatacgga agtatacatt tcagggaaat agtcgccatc gactgcactg     480
taatacaagt ggtaactttt tttgtttct ttcctttttc tccgctaata acgtcagtgc      540
accaaccaaa gccaagaaga ccggagcagc actagctgcc aatccatctt gtatttcttg     600
tgaataaatg ccttgataga ggcgtttgtc gttcctattc agcttcgtct gtgtaatgca     660
catccagata gaagcccttt tgagcctcca agtgagccaa ggcttgagag cttcttttgaa    720
ttttgcacct gcaacacaag catacgaacc ggcgtattat acaagtcgcc atgatctgta     780
taaaatctct attgaagagc tgtttataag ctgtttcgaa ataagggcta aaaaagcatc     840
atacaaacgt tgtgtagcta cttcatcagc tccttgaaag ctacttcaat ttcgatgttg     900
tttctaacct tcaattggtt tgcaaccaca tatactgaac aggattaatg gtaagagctg     
960
```

(2) INFORMATION FOR SEQ ID NO:1034

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 405 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...405

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1034

```
caaaagctta gaaaggattt cccccggata aatatagtag gataccgagt ggctatctta      60
agggtaacga tgatgaagtc ctgattgaag atattgctct aaaaagcccg atgtggtctt     120
tgtggccatg gggtctccca agcaagactg ctgatggagc gtatgcaaag ggtacaccct     180
aacgctatct atcaagattg ggcggtagtt tcgatgtata tacggggcgc cgtagagcgt     240
gctccgagtg gtggattcgc cacnatctgg agtttgccta tcgcctttat caagaagccc     300
agtcgcatca agcgttaaga tacatttaag ttaccgattc ctgttagagt atttaaccca     360
atagnaatat aaatttccat tgaaaaaaaa gtgatgtttt ggtct                     405
```

(2) INFORMATION FOR SEQ ID NO:1035

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 613 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...613

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1035

```
caggtttttcc tccatgagaa gagtggcact ccgatcatgt tctcgactag cgtgtcgttt     60
acaatacgca gaatgagaag atcaatggtt ttatgcttgg cgtatgttcg agaaagctaa    120
ggatgggcgt tatcgtacga tgggcgaatt atccgatcgg ccaaacaggg gatgctcagt    180
actgttttcc ccgattgatc aaccagttga gtttctttct gatgggtgat ccgtccgtgc    240
gtatgatctt cctacccaca aagtgcaatt gaccgcaatc aacgggcagg atccgaaggg    300
cagtatggaa ctattatgct caagtctttg gaacgggtag ctcgaagggt aaggtaaccg    360
atgaaaaggg gacattcgac gagacattca gtgcaaggtt ttcctgaccg tcttcgatgg    420
cagaaagaaa atgacagctt tgaagaggag ggaaacgatc tctctcttgn atattatgac    480
tatcctaacg gatgtatgcc ggtattgccg aggtgaaaga cggactcttc gaaacttcgt    540
atcgtaccca aggatgtgaa ctattccgag cacgaaggcc ggatcaattt tatgcttata    600
acgagagcac aaa                                                        613
```


(2) INFORMATION FOR SEQ ID NO:1036

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 565 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...565

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1036

```
ggacaaagct accggacgca tcatcaccga tctgatgtat aagcattgga cgagtgggtg     60
gagaccatac cacatccctt catcgcgaac gcgacggagg aatgatcacc accggcaaag    120
acatcatgga gggcgaaccc tacgaggtcc gatgaaaccg tggtcgggta tcgaagattt    180
cagttggagc cctgacgaca gaacatagca tacgccaagc cgcaagaaaa cgggcatggc    240
atatttctgt ctaccaactc ggacatatat atctataatc tggcttccgg ccggcgcaca    300
acatttccga agggatgatg ggctacgaca cctatccgaa gttagccccg acggcaagag    360
cattgcatgg atcagcatgg agcgcgatgg attgaaagcg atctgaagcg tcttttcgtg    420
ggcggatctt gccacaggaa acgcacccat gtaaacccac attcgattac aatgtggata    480
tgatccaatg gcaccggaca gtaagggtat ctatttcctt gcctgtaagg agcagagaca    540
atctgggggga gatcacgctt gaaaa                                          565
```


(2) INFORMATION FOR SEQ ID NO:1037

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 618 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double

```
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...618

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1037
```

```
tttccgacct tttgcccca tattccgcag gtctttatcg aaagaaagct ttacactgtt     60
tgccaactat aagaggtagc aaatcagtac tttagaagca ttacgagcac tcccatcctg    120
tgcagagtcg agatcattgt ttcttagcaa aagtacactc tgaccgacaa cgtcaaaaga    180
tatagagcct tagaaacctt tgattaggct tgatttccgg catagcagga gtggacgaag    240
ctatgcggtg cgaatgacac ttgtgcccc ttaccaatcg gcacaccact cggctacgca    300
tactcgcatc ccgatgccaa caaactcgaa ccgccgaaaa aagaatcggg caccttcctc    360
ttcgacaaaa acacgaacca taaatggaca aacatggttc gtgaatttcg agaaactcga    420
gcctaaaaat tattcttttg gtcgcaaaaa tttcacttct caaaccaaaa gcaaaatttt    480
cccgcgccac tttttcagaa ccacggatca caatcttttg gcaccacaaa taaaactctg    540
gagccatcgg tcttttatc tcagcaagga tggtaaaatt cgacccgata caacaatgcc    600
ctaaaccttt ttcggctt                                                  618
```

```
(2) INFORMATION FOR SEQ ID NO:1038

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 512 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

       (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...512

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1038
```

```
ctttgggcta aaaagatcaa aaggctggtc gatttttgtc tcgcattgat tttttagcta     60
tttccctgcc ttttatgctg atcatagctt tgatcatttc ctgcaagacg ggggggctgc    120
aatcttctca caagaacgca tcggtctgga ggaaagcctt tcatgctata taagtttcgc    180
tcaatgaagg tgaatgagaa gccaacaatc agcctcagct attccagaaa aatgattcga    240
ggctgcaaag ttcggtcgtt tcctgagagc ttctcacttg gatgagttac cccattctgg    300
aatatcatca aaggcgatat ggctatcgta ggctacaggc ctgaagggaa tattacatct    360
gccaaataat ggaaaagaat ccggactacg cctactgtac gaaataaggc cgggtctgtt    420
ttcctatgct acgctgacaa cgctatacgg atacgatagc aaaaatgctg gtgcgtctgg    480
agatggattg tatacttgca aaaatcagtt ct                                  512
```

(2) INFORMATION FOR SEQ ID NO:1039

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 930 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...930

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1039

```
attggatcga tacgagtatc ggtggcaata tcggattcta tatggcgaaa atagtctgag      60
cggacagaaa gattctcgca catacgattt tggcggcatt atcaagttgc cctaacgctt     120
ccctatggat tccgtatcga cagcgatttg aatacaatac gaactccggt tacagcggag     180
gattcaagtc tggacgatgg ctttggaatg cttcgctttc atacagcttc ctccgtgaca     240
aggccgtaca ctgcgtgtca atggctatga catcctcggt cagcggtcaa gtatagccgt     300
tctgcttcgg ccatcaatat agaagagagc atgtccaata cgacggacgc tacgtgatgg     360
tggactttat ctaccgattc aacgccttca gtgtggtgga tctcgcagcg atcatcagcg     420
tggcaatatg aatcgtccgg gccacctttc ggcggtggca gacgaccgtc ctgatcagac     480
gccacctatc gcaagagaca aagtgtgtaa gtgtttttat aacgaaccga tcgaggggcg     540
tgtcaaaatt tgattttgtc gcagccctct ttctttgctc cttgcagtgg ttaggcaacc     600
ggcttcatct tggaggccct actttattag cttttcgaga catagaagcg aatcaggcta     660
agattgtatt tattctgtac agacacgaaa aacagtcaat tgacaatgaa atcttcccgg     720
aaaatgccat gcgacatctc atctatcggt ttaacaggct cacacggaac ctcccactcc     780
ccgacctgcc atccgacaca gagcagatag catcttccat caatagacca tagatcctct     840
catgtgagac catagtatcc tctcatacga gaccatagta tctctcatgt aagaccatag     900
tatcctctca tgtaagacca tagtatcctc                                      930
```

(2) INFORMATION FOR SEQ ID NO:1040

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 310 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
       (A) NAME/KEY: misc_feature

(B) LOCATION 1...310

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1040

gggcacgaat gacacgggta ttattcctga ccagcatact gcccgatgga gtacttccga   60
taattgggaa aatacggcat cctttatctc acccttgtat aaacgagcaa tttacaggca   120
tcgcgctgtg gcaaagcatg tttggcattc gttcttcggg caatggatag tcgtagtcgg   180
caatggaaat atccgtgtcg taatcatcgt ggtatgatat tttgcgcggc aaaattagca   240
aatacatggc cgaacatgct cttttctgag tgtactgatc ccattcgaga tgttaaaatc   300
ggatttctac   310

(2) INFORMATION FOR SEQ ID NO:1041

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 596 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...596

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1041

gaggaagaac caatccctct cggaaaacct acactcaacg aactgatggc aacccactgg   60
aaggaggaag cgaatacatc gaactataca accctacgac aaacctgtcg ttccctctaa   120
attcgccata ggcatactcc gcaatggagc tacaccacca caactgcact gccgactgta   180
gccgatacac tctatcggga caatacatcg tctttgccaa gaagagtgag ggagtcactg   240
acttcacccc caagcgcaaa atgttgtcac gatgagcaac ctgcctcagc tggcaataag   300
ggatttacga tcggactgtt cgaagaaggc cttgatcaac ctctgaagaa gtggtctatt   360
cacctaaaat gctcggagaa ggaaaatgta acagacgagg gggtatcact ggagccgtat   420
ctccttcgag actccggatt cgattccgac caactgggca ggcggactcc atcggcaggg   480
atatgctact cggctacctn aactnccaat cctcaatgca gatactccca gtagggctac   540
caataacgaa acagaagcaa cggaaaagct acctgncacg gcagtatacc gaagaa   596

(2) INFORMATION FOR SEQ ID NO:1042

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 546 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...546

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1042

```
acagtagatg tttgctattc ggagattttc ttcaagaagt tggatacagc ctcaaaggac      60
gccctatcga ctatcttatc gtcgatcaca tggagccgac catagtggct cgataggcct     120
gctgcgccaa cgctatccca atatgcaatc gtcggcaaca agaagactca tgggatgctc     180
gaaggctacc accacatacc gaaggacttc tagaggtaaa agaaggcgac aaactctccc     240
tcggcaaaat gagcttactt tcattttcgc tccgatggta cactggccgg aagtatgttc     300
acctacatgc caacccaaca ggtcttgttc tctgccgatg cttcggtacg ttcggtacac     360
tcgacggaca tatattcgac aaggatatgg attctctttc cgctgggagg agatgtaccg     420
ctactacgcc tgcattgtgg gaagtacggc agctttgtac agaaagtact caccaagttc     480
aaggaagcca tctgcctgtt caatatatat gctctacgca cggcccgttt ggacaccgga     540
cacttc                                                                546
```

(2) INFORMATION FOR SEQ ID NO:1043

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 2014 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...2014

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1043

```
aagcggtgtc gaaagctcga tgatgcagct tcctatcgtc ggatggacgg ctgatagcag      60
cgtattcgga tctccccgat gtaatcggta tggtggacga cgagtgaatg cctattgtga     120
tgaagaggag tatgtatctg ctctcgactg tgcaacagnt atctgtccaa gtatccggag     180
gcttcctcgt atcaactgct gaaaagctct cgggcttcgc gcattttggc ttctttcgtc     240
aagtggacta tcccctccgg ctgcatacac gcctnccgaa gagcatgcgg atcgatcgcg     300
caatgtcggc tccgtcctca tcagtctgna ctggctggat atgatggctc gcaagctgct     360
gatataaggc aggaaggatc tgcacttgta tggaaaggaa cacctttttg gaccggaaag     420
cattcggaca cagggccggc catatgaaaa tggattcgat ccgctgtaca cttccggatc     480
tgcccaaggg gtctatctgg tgaaagcctc ggcagagcag tgtgtactcg aaaagaccag     540
ccggtgcccc aatacagtct gctccatgta tcggatctct tcttcctcct cagcaggcca     600
tgccggggtgt gcaggtactc gatgcgctga cgggcaaccc gtggaaggcg catcggtgga     660
tgcttccatg cgttattcta tagaccatcg gttcataccc tttctcctac ggatcggtat     720
ggtcggatcg atctgcgaaa agctacaatc gcttcttccc ctataccgac ggtgaccgct     780
cgtacccgtt gtttctgcct atacctacaa acaggatcag gtggatcttt ccagaagaat     840
gagcgcaagt atatcgtctc cacggatcgc gccatctatc gtccgggcag aaagtccatt     900
tcttcggcca gtgcgaccgg ataggttatg cgtggaggac gcacgcgcca tcggtggatc     960
ggaagttgaa gtcgtgctgg agatgctaac tccaaggaga tcggtcggct gctatgccag    1020
gcagatgagt gggacgtttc tccggtagct tcgacctccc gacagggatc ttgaatggct    1080
gttcggacta cgagtgggag gggatacata tccctttagt gtggaaggta caagcggcct    1140
```

```
acattcgaag tcggcctccg gagtcccgac gctgcaatgc tatgggcgac accctccgca    1200
tacgaggcga agccaagacc tttacggaat cggtatgcga ggagctacgg tgaactatcg    1260
gctgagcctg accctatac gcgtcggtgg tggggtagac ctgtggccga tagggtcgta     1320
cagccggtga ggcagtggta gatgaatcgg ggtacttcgt catacctgtt tcctgtctcg    1380
gccggaagga cgggaagact attcctactg cctctacacg catcggcgga tgtgaccgcc    1440
cccggtggcg agacgcaggc cgccgtactc gaatacccgt gggaaaagaa cccaagaggg    1500
tggacgtcga agtgggtaat acattcgtgc caacgaagac aactggcttg ccacctctct    1560
gccggatcga cattctccct taccaatact tccggacaga cggtggaggg atccatccct    1620
acttcctgtg cgatgccgac aatgaacgta tcggtcggct ttatacgcag cttcaggtgt    1680
ggtgacgcct gctccggccg aatggggcaa gttgcttcgg gacagtaccg attgcgtttt    1740
ggcgagagtg gcggagagga ttccactttg ttacgaagga cgtttatctc ttccgtccga    1800
aagatcgtca gtttcgaatc cctcccaagg cctttggaca tatgtggcgg aggagaaata    1860
cgcagtcacc gccctgcccg catcctggtc ggtgctactc ccaaggatgc gatgctcagg    1920
agttgtatct gttctacgga cctgactcag gcaggcncga tcatcgaaag gaagatgatc    1980
                                                                     2014
cgcttgccgg ccgggtgaga tcgtcgagaa gtgc
```

(2) INFORMATION FOR SEQ ID NO:1044

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 653 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...653

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1044

```
gcatggcttg ttttgacctc tctgcggcta tgggggggaga ggctgaaacc gacaatggct      60
gcgtagcggg ctgatgcata ccgatcatat acattatagg tgggtggata tacccgtcat     120
ggaggactgg tggccgatgc cttactcgct ctattgtccg tggcaaaatg gataggagcg     180
accagtncaa actctaaata gccttacaaa ccctgatgat tacgcttgat ttccggcata     240
gcagggtgga cgaagctatg ccggtgcgaa tgacacttgt gccccttac caatggcaca      300
ccactcggca tacgcatact cgcatcccga tgccaacaaa ctcaaccgcc gaaaaaagga     360
atcgggcacc ttcctcttcg acaaaaacac gaccataaat ggacaaaaca tggttcgtga    420
atttcgagaa actcgagcct aaaattattc ttttggctcg caaaaatttc acttctcaaa     480
ccaaaagcaa attttcccgc gccacgtttt tcagaaccac ggatcacaat cttttggcac     540
acaaataaaa ctctcggagc catcggtctt tttatctcag caaggatgta aaattcgacc     600
gattacacat gcctaaacct ttttcgctag gcattgtata gagtcatgtt ttc             653
```

(2) INFORMATION FOR SEQ ID NO:1045

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 758 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...758

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1045

```
ccacccatgg gagagtagtg agtgcattct tgaacatctg ttcgaaacca ggaacttcag      60
gatagagagg ttcactgaag gatggaacgg ataccgcctt gtacggaccg atggcattgt     120
tgaactgaac gcggtagccg atgtttactg taccttacct tggtcatcta cccagggtac     180
acggaatgtg aatacagatc cggctctacg atacgctcga tgataccgtt cttttcgaac     240
tcgggtgttg gttgtacact tcttctacag agagaagaac ttccttcact gcttgaggaa     300
ttcgctttcg ccggggtgct tagcctccag cattgtcata attcttgggt cttcatagag     360
aactctaaat aatagtaaga gattactccg gcaaagtagc taatgtgttt ggaactttca     420
agccttttct caaaaataaa gttagtaaga tccttgtagt ccaaatcaca aactaaccct     480
tccgaatatc gcttttcag tacataaatc agtatccgaa tacgtcgcca aaagattaat      540
atattgactt gattcaaagg cagcatgcat cgatggttta atggaggtgt tgtcggtatc     600
gaagcctcgc caaaacgcat accgaaacat cctcaaagca tagcctttaa tctctatctc     660
attatatcca aatgtgtctc ggatgacgaa cactcaccgg ccggccttgg tttttgaggt     720
cggacccgat ggatagggga gctttatcat cctcgaca                             758
```


(2) INFORMATION FOR SEQ ID NO:1046

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 682 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...682

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1046

```
gcccttggac tctccaggat ccnccgaatg ttctctgcca cgccttgttc tcattcgaca      60
cagagaccga ctcgaaagat gcacttnggg ccaatatcta tggcatagac gccttttgnn     120
gggggacgcc acacggcccg aatagacaaa ttcccatccg gaagtagtac ttaacccaac     180
aaaaaaccaa gaaataagca atgaatatcg ataattcttc cacaacgatt cagggaaaga     240
ccatctcgtc agggcttgac gcattaaaaa cagctttcta agtactttta tagtgttaaa     300
gccccgttag ttatgtatca ttctctattt gaaagcctct gcaggttccg gacccacgga     360
tagagcgtaa aaaaatttat cctcttgatt tttactgctg atcgttttcc tctctacact     420
ctcaggcaat acctcttggt agagattgaa gattatgccg aggaatacga agaagaattg     480
aaaagtctat cgaaatgctt accggccatc agcttatgca taccatgcct tctcatgatc     540
tctcaacagg agcatcagct ggtggatgta gaagcttttg aggggcttta agcgatggat     600
```

```
tgaagcttta tcttcggcac ttcgggtaaa catattgatt gatggcaaga cgatgccggg      660
agtgaagaac tctctttcga ta                                                682
```

(2) INFORMATION FOR SEQ ID NO:1047

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 645 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...645

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1047

```
cagccagtgt tcccagttat ataaaacaac cccagggatg cctttactaa cccctgaggt      60
tcttttaaat aacttgttcc attgccggat ttcgtctatg ttcagtcatc cgttcgtcgt     120
tgaatcggtg aaatcttttt acatggcgtg aaagaggcca agaagccaca gacaatccct     180
gggaagttgg ctataagatt ggccaatcct tcttcttacg aataaaacca tatcctaccc     240
acagtcgcag ttgatacctg cgaccattgg ctgaagccaa tcacctttat gtccgagaga     300
ttggaaccaa tctgtggaat ataagaaaca tacatcgcca tagtgttgcc gtggcaatcc     360
aaccgagaac tgacaaaaat ttttcttgat tcttttacta ccatgtttag ttcttgtgtt     420
tagcaaagat agtattcgca attaatcaaa gtaggtattt aacaaagaaa aatatatgag     480
gtcgatgatt gtttaaacac tgtatgttgc gccttctctg atgctatttc tgtgccggct     540
agctctctga ggttgtacga gtgcagattc gattctcaaa tatccatctg attattgtta     600
cacttgtgaa aattttcatg gccgacatcc gaataaaaga atacc                     645
```

(2) INFORMATION FOR SEQ ID NO:1048

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 749 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...749

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1048

```
ggaaattacc ctttaatctt ttctatttag gcaaacactc aaaaaataat tttatgtatt      60
tgtccataac ggagaatatg cttatggcca agataccttc ctactgtttc aaggccaata     120
ggtaagaata ttcgcaaagt gcttcgtaaa ttatgcggaa acagcccaaa tatttattgt     180
tctgtccaga attggagaga tgaatacaat cctttatgta ctaaatgaca agatatatgt     240
ttacaagttg cacaaatgaa agaatacgag ttgagcgatt attttaaaca cttcctcgtt     300
gaaattgtag tatacctcaa aggaggggat tgttcgaggt tgcctatttt gggactttat     360
atgtttttac tctgcctcaa aaaaaaaaga ataggtggtt atggtgctgc agtcgtatac     420
gaaagctaga agttgaatac ccgcaggaag taacgaaaaa atcaaaaaca acacaaaaaa     480
acagaatcgg gactagagcc gggggcatag ggaatggtta ttttcccact catggggatt     540
cctgcgccaa aagctatatc tttgtaatga accaatcagc gtggaaggtt tgtaatgctt     600
gcaaccacga gaaaaaatgc taaaacattt cttcttaaaa gctcttcgac agctattctc     660
caatggagtg tgcaagccct tctgtggaag gaagttttac aaattaaaag cntaaagata     720
tgagctatct attcaatccg aatcggtgt                                      749
```

(2) INFORMATION FOR SEQ ID NO:1049

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 651 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...651

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1049

```
ggctccactt cacaatccgg ctaacctcaa aggcgtcgta gccatcgaga gttgctcccc      60
ggtattcgtc aggtggggtgt attcgataca gctttcttca aaccatgccg gaacatgtgt     120
accgatatgc cttgccatat gatatgtcaa caagcatggt gtacgtcgct atggattcca     180
cggcaccagc catcgcatgt cagtgcccgt gcttgtgaaa tcttnggggtt tggactacga     240
caaaatcgca taatcacggc acatatcggc aatggagctt ccatcgctgc aatcaaaacg     300
gcaaggcttt ggacgtatca ttggggatga cacccgtaga aggcttatga tgggtacgcg     360
cagtggagac gtagaccccg gtgttcttac ctcctgatgg aagcagaagg cctcgaagca     420
gcaggaatct ctgaactgat cataaaaaga gcggtgtact tggcgtaagc ggtgtgtcct     480
ccgacatgcg gaaatcgaag atgccatcaa gaatggcaac gaaagagcta ctctggccag     540
accatgtacg actacaggat caaaaaatat gtaggagctt atgccgctca tgggaggagt     600
cgatgtgctc gtattcaccg gtggagtggg tgaaaccata taccacgaga g               651
```

(2) INFORMATION FOR SEQ ID NO:1050

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 377 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...377

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1050

```
gctgtgtcta ngtttggggn acccggatac agctttctct atttctgcca aagatcaatt      60
atcgtcacgt tggtttgttc tatcagggat ttataaaaca aggactctac cccacggtat     120
cgaaaacttt agagactttc caatcttgga gacgtttaag ctcgccatct tggattagga     180
aaaatgttgg caatgactga cattgaatga caaagctgct ttcccttcgc tatcgttcac     240
tgtgaccaag ggagtgtacg cgttgcattc tgccagaaat acaagtcctt gtcgcagaaa     300
tctcatatat ctgaaatcca ttgttgcaat gtcgttgata caggctcgct gttctttttac    360
caaagaaggt gaccatt                                                      377
```


(2) INFORMATION FOR SEQ ID NO:1051

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 756 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...756

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1051

```
ggattttgtc tggtaacaac aaacacagca atgaacatta acaactacaa atcaaatcgc      60
aggaggctct acagcaggct gtggagctga cccgtcggac ggacagcagg ccatcgaacc     120
gcagcacctg ctcaaggccg ttatggacag ggcgaaagcc tgaccgattt ccttttttgcc    180
aagatggggc tgaacagggc agtatcgcca cggctgtgga caaactgata gagaaactgc     240
cccattatcg ggtggcgaac cctatctgtc gcatgagacc aatcaggtgc tacagcagcg     300
gaggacgcag cgcaccggat gaaggacaaa tacgtctctt tgggcacatc gtgctggcta     360
ttctgactac gcgatgcgag gcgtccactc tgtcaaggat gccggagcca ccgaacagct     420
tctgcagtcg gccatcgaag acttcggaag gggcgcaacg tgaccagtca gagtgcggag     480
gaacagtaca tgcactggag aaatatgccg tcaatctctg tcagcgtgct cgcgatggca     540
gttggatccc gtgatcggtc gcgatgacga gatcaggcga gtgctgcaat tctctctcga     600
cgcaccaaga acaatcctat ccttatcggt gagccgggtg ggcaagacgg ccatagccga    660
gggcttggct tacaggatcg tgcgtgcgac gtgccggaga atctgcgcaa caagcagata    720
ttctctctcg acatggtgcc ttgatcgccg gagcca                                756
```


(2) INFORMATION FOR SEQ ID NO:1052

(i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 424 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...424

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1052

ggcaacgaaa aattccgtgt aaacaaataa ttcgcctcga caaaaaatag gctatcataa   60
aaccattcaa aggagtacgt cctccgaaag aactcgtaag caagtagcat ctcgcccta   120
cgacgtcctt aattcagaag aagctcgaaa gaagcgaagg gcaacgaaaa gtcgctctat   180
catattatcc gtccgggatc gatttccctg taggaaaaga tgaacacgat gcggacgtgt   240
atgaaaagct gccgagaact tcagaatgtt ccaagaaaaa ggctggctcg tacagacaca   300
gaagaaaact actacgttta tgcccagacc atgaatggca aaagcagtac ggncttgtcg   360
taggtgcata tgtagaggac tatatgaacg gctgatcaaa gaagcatgag ctggacacgc   420
cgcg   424

(2) INFORMATION FOR SEQ ID NO:1053

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 622 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...622

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1053

gacatgacta tctccgccaa cgtgtcttgc aactctttgg caatatagag gtcttgcgat   60
ttttcaaggt gttgcgacag atgaaaagcg actcataaca cctttatcag cctttcgcct   120
ttctcttctt gggactcttg aaaaatcttt gacattggtt cttcatttgg acgttccgat   180
tcaacacact gctctttaat tgagagcgtt ttatttcgct ctcatttctt ttcatgggaa   240
tacccgtgaa acaagttccc ggatggcaac aggatctacc ttgccgtttt ggtttctgtc   300
atacttactt aatttttnatt gntatacaat tcactgttca tttttttgccg gtatatttac   360
ctgcaaagat gaatacatcc actatctaag attgcccgat qatggggttg taccagcagg   420
gctacatcct ttcgttcata ccttttttgtg ggagatgttc attgatgtcc atcaatacaa   480

```
tcgttcgatt tatctgctttt cacacatttc cacgttcaag tgaaaagaat caaaggacgg    540
ttcttcgata tacccccctcg cttatatcgc tcatcgaatc gtgatatctc gaagacacat    600
tcctncaccg acatattcga cg                                              622
```

(2) INFORMATION FOR SEQ ID NO:1054

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 464 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...464

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1054

```
gtaatagtgg ggcgcattcg gcaggatttg gctaatccca gcggtttggg ttttggtgcg     60
tatcggatca gatccggaaa ggggctgcac tcaacgcttt cagatagccg aatatctcat    120
cgccaaagga catttcgctc gctgacacgg tatcgctttg cgacatagcc tgaaaaggat    180
aaactccgaa agccaattta accctcctgc tttcggggtt tgcttttgtc gtattataat    240
gttctttcca ataagaatcg atctaaaaaa gatattgctg tccggtaaaa aatgagattc    300
tatcttgaat ttcctaactg cccaagtttt accgatagca atagaaaaag agaccattgc    360
acaataactc ttctatccct tcatattgat cagacagaca caagcattga ttcgacgaaa    420
gtaaggagtg cttcatgcag ttttgcgaac cctcaagtat ggga                     464
```

(2) INFORMATION FOR SEQ ID NO:1055

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 847 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...847

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1055

```
ggttgttctc ctgtatccaa ttcttcgtca aaaactttga aågcctcaga catcctccga     60
```

```
gattatagat gagaatggga taaaaactta cgaactctcg tgcggaactg cagctcatag       120
tagtgtagta aaagcaagaa gtcttgttag ggctaacacg ttgccaatag gagataaaag       180
aagtggggcc ttgagaaaaa aagaatctgt cggtagagat atgtactgaa atagagtgtg       240
acagtgtgag gatagccatc aaaagccctt attaatcggg atagtccagg tctttaggtc       300
ttataagatt tattaattca ttggagagaa tcagatatag cacgtattga agtccgcttg       360
actttttca aaatctccta tctcataata tgaactcctc taccattata cccaaggatg       420
tatttatcgt ctaattctat tcctgagaat agtctttaat cgcttttta taccatcctt       480
tcttagaata gcatttcctc taccatgata cgcaggggcg tatttatcgt ctaattctat       540
gcctgagaat agtctttaat cgcttcttca tatgatcctt tctcacaaat gcatttcctc       600
taccataata cgcatgggcg aatttaccgt ctaattcatt gcctgagaat agtctttaat       660
cgcttttta taccatcctt tcttagatat gcatttcctc taccatgata cgcaggggcg       720
tatttatcgt ctaatctatt gccttagaat agtctttaat cgcttcttca tacgatcctt       780
tctccaatat gcaactccta taccattata cccaaggtgt atttatcggc taatctattg       840
cctggag                                                                  847


(2)  INFORMATION FOR SEQ ID NO:1056

        (i)  SEQUENCE CHARACTERISTICS:
             (A)  LENGTH: 569 base pairs
             (B)  TYPE: nucleic acid
             (C)  STRANDEDNESS: double
             (D)  TOPOLOGY: circular

       (ii)  MOLECULE TYPE: DNA (genomic)

      (iii)  HYPOTHETICAL: NO

       (iv)  ANTI-SENSE: UNKNOWN

       (vi)  ORIGINAL SOURCE:
             (A)  ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix)  FEATURE:
             (A)  NAME/KEY: misc_feature
             (B)  LOCATION 1...569

       (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:1056

gcgaattatt acaacgtcca agttgttcgt acgtgcagcc acaacagcct gaggtaataa        60
gtagtagcat cgggattctt tatcccattc aggatctctg tgctcggttg tagtcgcgat       120
tgaggatatt ggccacggca gcattgtgct ctcggtctta ccgaaagccg ctacagcctg       180
ggcataattg ccctctgcag atagagcaaa ccaagagctt cgcccaattc gggcacattg       240
gcagcgagcc gaaatactgc ttagcctgct ctacattacc ctcgttaaga gccatagtcc       300
aaggttcata tcccgtttct gcattgggct tcacgcttgc agcttttgga accaagtccg       360
agcaccctcc aaatcaccgc tgcgataacg cacataccga tattggtata agcacgatag       420
tcatccggat agatctgagt accaccttgt aaatatcttc cttttgagca ggagattcga       480
gcagagtaca tatagagcag ctcttcacgt cagccggccg ggtctggctg cagacgttgt       540
ctgtatcgtc tacctagatt cgacattgg                                          569


(2)  INFORMATION FOR SEQ ID NO:1057

        (i)  SEQUENCE CHARACTERISTICS:
             (A)  LENGTH: 608 base pairs
             (B)  TYPE: nucleic acid
             (C)  STRANDEDNESS: double
             (D)  TOPOLOGY: circular

       (ii)  MOLECULE TYPE: DNA (genomic)

      (iii)  HYPOTHETICAL: NO
```

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...608

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1057

```
cgacaacagc cgactgcaca tcacctatat gaacgtcgcc gtaccgtttt gatgaagaag      60
tgccgcagct ccttttctct ctatgccgct ccggtgctaa gttcaagacg gcttccagct     120
ctaaggtgtg gttgccggac aacaagatca ccagaaacac ggtcgcgatc tgaacctgaa     180
tcctatcgtc ctcgaactcg tgtcggtatc aattacagtg ctttcaatct ctatggttct     240
tataccttac gcccctgttc cgcagtggaa aaggacctga tacacgcatg ttcgcatcgg     300
cttcggcttt ggtttctaaa aacgaaaaag caatgaaacg ttttttttga ccaccgctat     360
actgctgtcc tccgtgcttg cctcttacgc cgcagccttc cttcggccgt tcgcgatacg     420
gtgattcgtg ccggggagaa accattatga tcaaggatgg tgaggaccaa tttcgaggta     480
attatacagg gtccatgcct tccggagata cgatccgaaa cgaaaagata ttcagaggtt     540
ctatcgcaat ggtcgcagca tcgaacaacg ctttcggaat actttgataa tcggccgaca     600
gggataag                                                             608
```


(2) INFORMATION FOR SEQ ID NO:1058

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1130 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1130

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1058

```
acggtcctgc ttgagcatgt attgcgctgt tgcaaatgcc gattgtacta atgagagccg      60
acagataccg aggatcctgc tggcaaagct gctgatcctg aatcgtctgc gctcatcgct     120
accgcccagt atgagctgat agtcctggga gaaactatta ccagcgggaa gcgaccgata     180
tgatcgctca gtcgttatat tctttcttat tccgacgcag taccttgtgc ttccccggac     240
gaataaaagg agcagctcta tcccatcgcc gctttcatcc cgataaagcc cctgaacagg     300
gccatttctt ctccatgtct gacaaccata ttgtccggta cggaagatga ctgcgacaga     360
aagagaggaa atgcagcgca tccagcagat tatcttgccc attccattgt tccccaccag     420
acagttcact ttgggcgaaa acggcaatcg gcagctgcga tactcttaaa attgacgata     480
tggagttctt tatgatcatt ctcgttgggg taagatagag ggtggaggac tgtctcgcct     540
tctgtcaaac gaatacctac ttccgtgata cctgaaagag tcggtacctc atattgtgct     600
ttaactctat cttataaaga cccgaatagg gaaacggcg gagatcggca ggcgaaaccg     660
gttttgctgc ttggcaaccc cttttcgttc cactgttgcg gcttgtcggc caaagtcaga     720
tccacagagt ccgcaagatc agacgctctc ccactgaaac ctcgtatgcc aatgccaaat     780
cgcgtattca taccgattgt catggcggat cagcagctcc aaagaatatg agcagtatag     840
```

```
tccggtatga ggatttcgta gtcgagcaca tcgcgcttct gcaccttcca tgaggcacct    900
gacgatacag tattcgctcg tccttacngt agtgcaagac acaagccaag catatcccca    960
atgcaaccag aaaaaaactg ttgcgccttc ggacttgctt tcgtaccggc aagcacccat   1020
ctcccttttat ccttctttct cttttcctgg tcggctttct gacgtggaag tgctttgacg  1080
cggtggtctg cggcactggc caccacacgt ctggcttctt tcatacgtcg              1130
```

(2) INFORMATION FOR SEQ ID NO:1059

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1373 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1373

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1059

```
agccataaac tgcggccgta tttcattatc tttgttccat aatcatggat attatgaata    60
acgatctcca atttactatg gtagctaaga ccctttatgg ttggaggatg tcttggctgc   120
cgaactaaca gccttgggtg ctgaggagta accgtcggcc ggcgtatggt cagttttcga   180
ggagataaga ggatgcctat cttgctaatc tccggttgcg tacagcactg cgcatattga   240
aaccttaata actttccatg cgaagacgac agatgaaatt tatgaaaggc tcagcttttc   300
gattggacga ccgttatctc atcggatcaa actttctcca ttgttccgtc gtttattccg   360
attcgttcaa gaacagtcag tatataagtt atgtaccaaa gatgctttgg tggatttctt   420
cagtgatcgt gagggcaaac gccctctgtc cggctctcca atcccgatat tttactgaac   480
atacatgtgt gcacgaggaa gtaaccctgt cgctcgatag ttcgggcgat agtctgcaca   540
gcgaggctat cgtgtggccg aaacgactgc tcctctaaat gaggtgttgc tgccggtatc   600
ttgctcaaag ccggttggga cggtagtacg gatttgacga tcctatgtgt ggatccggaa   660
cgttcctgat cgaagctgcc ctgattcatg caatattgct cccggtatct ataggcgagg   720
ctttgctttc cagcgtgggc ggatttcgat ctcgatctat atgatgagtt gttccatgac   780
gacatgcgga acgtgtattc gatcatatca tctacggttc cgatattttg ccaaggccgt   840
ggctgcggcc agaagtaacg tggagcgagc cggtcttggc agtatatctc tctgagtgtc   900
cttcccatgc agcagcgtcc gaagcctgaa tcaaggctat gctggtgatg aatcctccct   960
atggagaacg tatcaaagtg aggacatgca gcagttgtat accatgatcg gagagcgact  1020
caagcataat atgcaggttg ctctgcatgg attctggctt tcaagccgga gcatttcatc  1080
atatcggcct tcgtcagtct catcgagaaa agttgatgaa tggagcttgg aatgtgagtt  1140
gcgaggttat gaactctttg agggacgacg cgattctttg ccgaaagaaa aagtcgtcga  1200
gccgaaggag aacaaggcgt aggacgagaa tcgaccgtcg tgacgtttct gccggaaggg  1260
aaaaacgctc caacccatgg atcgagaaaa taagtctcct tatcgttctc ctcgtcctga  1320
taacctttca gaacttccga taaaaggaaa aaagagcata atgatgagca gca          1373
```

(2) INFORMATION FOR SEQ ID NO:1060

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 770 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...770

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1060

```
gcattccact gtacgggatt gtggctggct gtgatgatga taccgccatg gcaccacagc      60
ccgtgacggc catttcggta gtgggagtcg tggccaaact atatcgacca catcgcatcc     120
cattcccatg agagtgccga aaacgacttc ttgaccatga gtccggacgg gcgagcatcc     180
ctaccgacta cgatacgggg cgtttggttt tagttaactt tttgatgaaa tgagcatagg     240
cagcttgaat tgggctatgc tgataggatt taatccctca tcggccatac cgccatcgtg     300
cctcgtatgc cggagattga tttgatcaac gtcatgatat tgttgatgtt agatgaatag     360
attcctaaga ttagaggtcg ggaggggtca gtccgaaata cgtattccac ttccttgtaa     420
tatccggtca ggcctcgcga aagagcgatt ccgggccgat tcggaaaggt acgatcaggc     480
gcacgcgagc ttattgccaa gcatggtcat ggggaaagcg actccttcgc agacgaacaa     540
tccaggttgg aaccggtcgt acatttgatc agttcgaagt gaatatccca tcgttgtact     600
tatatatata gcggaatacg ctctcctgaa aaccgccgaa gtgagactgt tgaagacata     660
gatggagtcc ctctcacgat tgaacagaaa ccttccatcc tgacgttgat cttggtcttg     720
ttcagcacgg gaggcctttc cccttatcca gtacctgcat ataaagatcg              770
```

(2) INFORMATION FOR SEQ ID NO:1061

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 504 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...504

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1061

```
tatatccatg caggatatag ggctctttcc caaaacaggc aatactctcg catcggtcaa      60
gaatatgccg atgtcgtgca gcatggcagc ttcttcgaga agagacgatc cgcctgaagc     120
tcgggatgga tttcgacgat acgaagacca aggccgccac atcacggcta tgctctacta     180
aaatatggta ttggttgttc cctcagtgta gtacttattg atgatgctga tcggatccat     240
catttgggaa agagagttag acgggaagtg cccggagccg ggatcgaacc ggcagaattt     300
gcattcattg gtgtttgaga ccaacgcgtc taccaattcc gcctccgggc aattgtcttt     360
tcgaatacgc gcaaaggtag aaaaataatt catccgcaaa tacttcttga taaaaggagg     420
tctatgggtc aaaaagatgg atagtatcga agagagaaag tctctcttcg atgctgcccc     480
```

gattgcttta tggctttct attc

(2) INFORMATION FOR SEQ ID NO:1062

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 661 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...661

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1062

```
gttcgttcgc aaaccacagt gacaggagta caacccaagc tatctctcgc tttgaccaaa    60
tgagcaattc gcccaagcga tttaccatcg tgggcttggg ggacggttta ttcttaaacc   120
tcaaacagag cgttattcgc atctcccgaa ttggaggatg tgtcaatgca ccttgcagag   180
attgccaaga tagaaaagtt cctcatggac tgatgcgatt tagcgatggc gaactatgct   240
atatcctcgt cgcatagacc gaacagggca aggggaaaag ctcccaatgg aagaatgtgc   300
cagctctcag agcgtctgac cgaatataaa tacaaaggct caccgagcag gtagccaagc   360
tgatctccaa gtatagctct gtgccaaaac ttatcttgtc aagtactggg agcaggtact   420
cttttcgtgg ctgataggta agccgatatg cacctcaaga attactcgct ctatgctcca   480
gagggaaatg atatcaactc actccagctt acgacctgct gtctacggca cttgtattct   540
gaggatacag aagaacttgc attgaccctc tgtggcaaaa agcgcaaatc actcgccaac   600
acttcctcga agcgatgaca gcctcaggac tagatgaaag tgtgtgacaa tatttcgctc   660
g                                                                   661
```

(2) INFORMATION FOR SEQ ID NO:1063

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1865 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1865

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1063

```
cgtatgtgtt tatccggtcc taaggggtg acaatgagcc acgcatggaa gtcagacctc        60
gcttgtggca ctctttttagg gcaaactcca gcgggtcgag tccggcttgc ctgtcccggt       120
gaatatggtc gattgggggtt ctatctcgag gggtaaatga catctccgcg atgacgcacc       180
tgaaagaata cagtgtgaat ttctcacgct tgagcctgtc cagaatacgg cagagttctt       240
ctctcgtttt cgcagtcctt cggccgtagg agcggagcgt tgtggccagt cgagccatat       300
atggtggtca gccataccc acgcatttcc tctctcaccg gacgacccac ggttcgatga       360
caggagctgc aatcaccgtg tccggaagag gctcactgtg ggggagacg gggcgacctt       420
tttagtgcca cagccggcaa aaggagagcg gcaatactga cgaaccaccc tgtgagaccg       480
ctaatcttca atttgatgtt atcgatcagg cgaacctctc cgcaatatac cgtaatacac       540
ctacggcatg gtcggtgtct tgccagttgt cgatcttttg taaggaatcc cgtctactat       600
ttcgaagtac tccacttgca gatgaggcag ggcattaggc tttccgtcac ccatcgcgta       660
acagcttcgg gtgtatgtgc cggacgagtg tgcggctttg tccgaggatg cgagcgatgg       720
atggggctat ggcacctctt cggtgccgag gcggacgttg cggctactga gtgcaagccc       780
gtcccttcac ggatgatagg acaggccacg atcgtaacgg gtaagccaag cagttcacca       840
tgctgcggat aacggcgatt tgctggaaat cctttctcc gaatatgcct tgtccggctc       900
caccatcatg aagagtttgc ttaccacctg cccacgccat tgaagtgtcc ggggcgatgc       960
ttgccttcca tcacttccgc acactgccca gatcgaatac gcgagtgtcc ggttcgggat      1020
atacctcttt acggagggca tgaatacggc atgacaagcg gcttccgcca agactgctca      1080
tcggcttccg gtgtgcgggg ataacattcc agatcgcgtt tgtcgttaat tgtgtaggat      1140
tgacaaatac gcttgccacg caaatgtcgc attcggtacg gcacggtgga tcagactgat      1200
gtgtcctcgg tgcaaagctc ccatctgggg acgaggccga tggtttttccc ttcggcacga      1260
gcatgtgcca caaattcttg agtgaagcga cggtgttgaa tatttccata acggcattat      1320
ttgtcttctg ttatgacttt ggtgataaat ccctcgggga taattttttg caaggaacag      1380
attatttgcg gattggccgg tttgatagag agactttag tgtactttag ccttggctta      1440
tcgttatgcc ctcaaaaatc aattcgatga aaaagtatta tctctcttaa tggtattggg      1500
tgctatcatg ttttactgca tgatgcccag tcgcaaataa gtattcgtgc ttttgagttc      1560
aacgccaatt caatcattcg ccggccggca ccggtgccgg cagtgatctg ctcggtagga      1620
tctgaatctg cggatgcaac tgcatcatgc cgaactaccc gatgcctgga tttctatgtc      1680
ggcatccagc ggagagagag ctttttggcag aatggaatgg ccgatcatc tatgtgaatc      1740
atcccgatgg gacaaaagag aaatgaactt cggcactgct gaagcccgtt tcaaagcgat      1800
gcatacagca agtgctgatt gcttcggccc ggcatatacc ctgtctatag gcaagcgttc      1860
ggtgg                                                                  1865
```

(2) INFORMATION FOR SEQ ID NO:1064

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 598 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...598

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1064

```
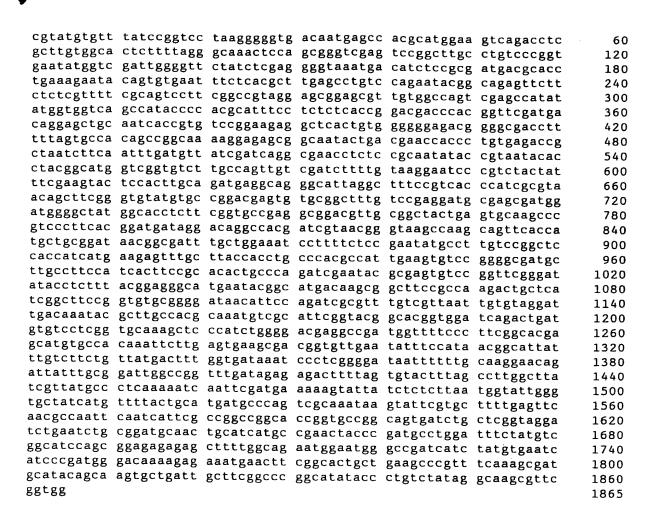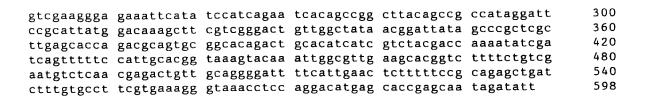ggctgtatct ctgtcagact gttccgatgg attcgccaca gctgagggac agccagatgc        60
aaggccgtat ctatggtacg aaggagccga tcgttgtcca tggcttgcct atgaagtcga       120
aagctccaag ccctcattccc tccactgcag tggaatcgaa gcccaagccg tcatcagtat       180
gacagggcag gaagtgatat ctgcatcttc tccagtagtt ctaatccttc cctgccggag       240
```

```
gtcgaaggga gaaattcata tccatcagaa tcacagccgg cttacagccg ccataggatt      300
ccgcattatg gacaaagctt cgtcgggact gttggctata acggattata gcccgctcgc      360
ttgagcacca gacgcagtgc ggcacagact gcacatcatc gtctacgacc aaaatatcga      420
tcagtttttc cattgcacgg taaagtacaa attggcgttg aagcacggtc ttttctgtcg      480
aatgtctcaa cgagactgtt gcaggggatt ttcattgaac tcttttttccg cagagctgat      540
ctttgtgcct tcgtgaaagg gtaaacctcc aggacatgag caccgagcaa tagatatt        598
```

(2) INFORMATION FOR SEQ ID NO:1065

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 547 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...547

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1065

```
gcgaatagcg aggcaacttt gaatgaatgg tgcgactatg cacacccggc ggcatcgtga       60
gggtagaagg tcgttttttgg aaaatgactt acaacataca acctacaatg cagtctgcac      120
ccggattaca ttcgaaaatc aagaaatgaa ggaacgatcg tcttgatacc caagcccaaa      180
gtctcgctgc ctcatggtcg gaatcggtgc cttgcatccg aaccgaagcc gggagggaat      240
ttatctttgc gaagaagacg acacctttgt gtctcacgat ggtaacgaag taacataggc      300
ggtaaacctt tcttgctcaa taccaacgta aagattgtgg gggcgtatct caaaagtatg      360
ccgtggggggt aggagaaatt cgattcctgc agtttgtgcc caaacagtat cacaacaaaa      420
atgaacacaa gatgaaacaa aaatacttgg catacagctg tcacaatgga caaagtgttt      480
tctttcattc tcctgattgc aggatgtaca ggagcattat cggggcagtc ttccatcaca      540
tcgagag                                                                 547
```

(2) INFORMATION FOR SEQ ID NO:1066

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 970 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature

(B) LOCATION 1...970

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1066

```
gccgcaagtg tcgttttcgg tgcagaggca caggtcacag agtcggggct ccatattgga      60
aggatattcg tacggtaagc gtaaacaaag aaccggcggt tcgtccttta tgacctatgc     120
cgaccgaagc gaagctctca ccggcaatat gagaagagtt cgtactaccg tcttctgaac     180
ggcacgtggc gattctttat gccgagagcg aggcacatct gcctgccggc ataacggata     240
gctcgcaaat acaaagggat ggcacgacat ccaagtcccc ggcaactggg agatcaaggg     300
cacggtgtgg ccatctatac caatcacgga tacgagtttc agctcgcaat ccgcagccgc     360
ccaaactgcc ggaagccaac cccgtaggtg tgatcggcgc gagatagaag tacccacgga     420
ctggatggag cgcgatatct actccatata gccggagcca agtccggact ctatgtctat     480
atcaacggac cgaagcgggc tacagcgaag actccaagaa tccggccgaa ttcctcatca     540
tccctatgtc catgccggaa aaaacacgct cacgctcaag gtctatcgtg gagtaccggc     600
tcgtatctgg aatgtcagga cttctggcgc atcagtggat cgaacgcgat gtattcctct     660
ttgcacaacc caaggcggca gtgaagattt cagcatcaaa tccacactcg atgatagcta     720
ccgcaatggt atatttccct gaaagccgac ttacgcaacc gccgtggcga agcctccgag     780
ctattctgac atacgaattg ctcgatgccg aaggaaagac catcgccacc gaacccgttc     840
gaccctcata gctgccggcg gagagcgtac cctctctttc gagcacagcc gggtacggta     900
catacatgga cgtcggagca tccctatctc ttaagctctt gatgacggta cgagagaaag     960
ggaaagtcac                                                           970
```


(2) INFORMATION FOR SEQ ID NO:1067

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 885 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...885

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1067

```
ggaactcacc atcgacgaga ttgtggaggt gaacggtgag aagtggatat tgcgaaaagg      60
cacaagacac aggtgccgta ccaagtgaaa ctgctcgagt acccttgcaa atcatcgaca     120
gataccgacc gttccaaaag gacaactcat attcggggac atcaactact ggacggtctg     180
caagaagctc aaaaaatcat cagcgagtgc ggaataacaa aagacatctc cttccattgc     240
gcaagcacgg ctttgcgaca ttggcactca gtaagggcat gccgattgag agcggagccg     300
tgtactcgga cacacgaaca tcgtaaccac gcaactctat gcgagataac caccgagaaa     360
ctcgacaccg acctctccat gctcggcagc aactcaacgc ctcatttggc tatatcaaaa     420
tggcatgaca ,atgaaaggga aggcataaac agcaatgtcc gtcagataat cacggtggac     480
gaacatggga catcaccgta cccaatgaag aaatatggat gagcgagtat gagattgcca     540
cctgctgggc gtattcggac ataccatccg cacgcaggtc aagaagatta cagggatgga     600
ctgctgcact cctgcacggc agagaggaac atcagggggc ggagggtcgc tggcttgatg     660
tgtacagcct tgaaatggtc atagccttgc gttccgcatc aggtcgcaaa gggcaaaaag     720
gcttcgaaag catgtatcgc aatgctgacc gaacgacacg gaggctttat catgttcctc     780
ccagagaagc aggttgttcc tgctaaaaca gcctgacagg gtttatagag gttgtcccca     840
ttgacacaag gggataaacc ttttttcttt tttggtggct ggaga                    885
```

(2) INFORMATION FOR SEQ ID NO:1068

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 962 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...962

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1068

```
ggattgatgg agtggatggc aatgctgttc cactgcccaa tgtattggtg accatctgaa      60
agaccggaat gttttggggc atggtgctct gttcttttag caaatggaat agttgctacg     120
ggaaaatctc ctcaagaaat tgctgaagtg tggctgtcgg cgaagtagat cttacctctt     180
accccttctg ttctgcaatg tcattgcaga tacattggca ccgctcataa caggagggat     240
gcaaaaatag ctgccaacag aaagagaaga gaggactaca tcgagactct cggaaagggc     300
ctagacctta tctctacgtt attgttgcta ccggcaatat atagaagacg ttgttcaagc     360
acaagcagct gctcgccaag gagccgatat tatgccgtaa tacgtactac gggacagagt     420
ttgctcgact atgttcctta cgagctacga cagaaggatt cggggtact tttgctacac     480
aagaaaactt cgtatcatgc gaaaagcctt ggatgaggtt ggagaagagg ttggtcgatt     540
atcaggctct gcaactattg ttcaggtctt tgcatgccgg aaatagccta atgggagcac     600
tcgaaggctt ggatgtaatg ctcaatgatg ctctctagga attcttttcc gagacattaa     660
tatgcaacgt actttggtgg atcaatcatg agtcgtgtta tcaatggatt tgccggcgtt     720
atcatcaata ccggtaggat aactacctaa ccactgctga tgccgtagaa gaagcacata     780
ccgtcttgcc tcggatttga tcaatgagca gctggctctt acagccggat tgcttcagaa     840
cagatggggc ttggacatgc atttgaaatg gatcccatgc tcagaatgga ttccttttcg     900
aattggctca agcacaaatg accagagaaa tttcccaaag ctccgcttaa gtatatgcct     960
cc                                                                     962
```

(2) INFORMATION FOR SEQ ID NO:1069

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 623 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature

(B) LOCATION 1...623

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1069

```
gaactcacgt taaagtagat tatagaaaga cccagtaacc caattgtaga ctatcccggc      60
ccaactggtc aactttttc agtacacgnt caaactttcg gtttggcgcg ggagcgaaaa      120
aattctcacg ccactgcgaa aaaattccgc gccgcttttc gggaaaacac gcgccacaat      180
cggagcgttt ctggttgtat ttccgaggct gtcagttgta gactttccga caatggtgta      240
gctctactcc tccatcctac aggctcggcc aacagacaag cacgacatcc ccaccattgc      300
cctcgcatca gactgatgag atcgtgactg ttgatgcagg aaccataaaa aggaattttt      360
ttcggattca tttggcgcat aacaaaaaaa gctacctttg cagcgtcaaa atcagaagga      420
gctttccttt tgatgggtat tactccgtag ctcagttggt agagcaaatg actcttaatc      480
attgggtcgt agttcgagcc tcaccggggt cacaaaccaa tagcagaggg ctgtgttgaa      540
tagttttttt gacacggccc tttaactttt ggatcggggt tcgcctttgt gaaaggatat      600
gggaaatatc tgtcaaatgc cga                                              623
```

(2) INFORMATION FOR SEQ ID NO:1070

   (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 930 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

  (ii) MOLECULE TYPE: DNA (genomic)

 (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: UNKNOWN

  (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

  (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...930

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1070

```
cagtcctttc ctggtcgggt tcgtttcgcn tgaacgaaga ccgatacttg agtttgtttt      60
ctttcatttt tctgtcgttt ttttctaaat ttcctttgtt gcaaaggtac atacgaacaa      120
gtattcntga gcgatgcaga aaaatgaaga tgaggaataa aaacctatga cacagttgtt      180
tacattcaat tcgtaaccct ttttgctttt tccctgatgg gttacgattt ggtaacggaa      240
ctcctccgtt tgatgctcgt tcttgcttac cctcaaaata gtaagaaaat gctaatgata      300
ttatttcaaa tagttacatt ccctgcattt ccctctgttt ccctaattct taatgactga      360
ttatgcccac aagatgagct tagatttacg cagattgatt tggagaggta ctcggatcat      420
atagacaaca aggcaagcca cgtgccaaga tgctcaatga ctattaccag aagttcgatg      480
cacagaaggg acgcagttcg ttttctctga tttagggact tataagcccg gaggagaatc      540
aatgtctatt cggagatcaa acgtaagttg gtagaagact atcacatcca tcgcatgaag      600
tacgctttat ccaagagtgc aagaacgaga aagccaaaaa gcaatggtgg acgccatgaa      660
ccgtggcgac atccgcatca tcttcgttct acttcgatgt tgggaaccgg ggtgtcaatg      720
cccagcaacg tgccctggct atccaccacc ttgatacacc tttggcgtcc ttcggatttg      780
gagcacgcaa cgggcgttgc cgtgccgtaa gggcaatatg attgccaagg agttgcggat      840
aacaagtncg atgtgattat ctatgccgta gaacgctctc tgatagtata agttcaattt      900
gcttcacaca agcaagttgt tcatcaatca                                       930
```

(2) INFORMATION FOR SEQ ID NO:1071

   (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 537 base pairs

```
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...537

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1071

tcgatattcg tcagttggta cgaggtgcag ccgatatgca agccatgacg cttcagacat        60
tcctttttcg gacaatccgg ctttacgata cgcggcagtc gcaatgcttt gtatgccgaa       120
ggaaagaaga tagagatact ggccaattcc atcccaaaat gcactatatc ggagagtggt       180
ggaagcagct tttcgggaga gcgagggcaa agaggagaag gggatcttca cggcaactgt       240
ggatcgacta ccgacctcca ttccatggga caatggatgc aggagggcga acgtcgatat       300
tcgagacagt gatttccgta gaaaatcaag atacatgctt gacattcctt ccgactcggc       360
ggatttggat gggcttaact ttctggccgg aagcgtgtag acgaagtaaa taagatggct       420
gaattgggta cccggctggc tatgtagatg ggggagtacc taatatacgc atcattttgc       480
cgcaattggg tgcttattat ataggggcag ttggtctatt tcttttgaga aagccgg         537


(2) INFORMATION FOR SEQ ID NO:1072

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 1801 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...1801

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1072

tcgtggaacc gacttctcgg ccaaataggc aagcgccgat aatacctctt ggganccaac        60
atctccatcg atggtatgcn gcttttcgac cgatgccagc gtacccaact tgtatggtat       120
cacgggagta gatcggtctg acctgtaggt tgcggatcgt accgttactc gcaggacggg       180
aatgaatncc ggtatcactt tcgtaccatc tccacagatc atatcgaaac catcgaaata       240
gancgggcat ctcatccgta ggggaaggta attttgtcga ncggagccat tcgctcngta       300
ccaagcaagg gtctgctcca cttccaaatg cgtgtcaagg ctgtcccctt agcaaactgg       360
cctatgtggg gaagggattc aaagtgtcca aggcggggca tccattcata cgggaataga       420
cttcctgcac aacaaacccg agtgagggag gtgttggata gctataagcg gagtacgctg       480
catgccagat tagcgatcag ttgaattacg gggatatgat cctggacttg ggtatcgggt       540
```

```
gatgcagacc ttttccattc aagacagcaa atcggatcag ctcgtcaaga gtatgaagag      600
acctacaact ccaagtattt gcgttcttct ctttcctcga tgccaaagtc cgctttttcgg     660
gtagttggct caatagtata gactggttct ctctgccgac tatacttccg atctgctcaa      720
aaggaagaaa tactaatcag tacgagtggc ccgaagagta tgcccgtagc taccgaaagc      780
ggagacatga aggtgttttc ctcccttcgg cctactatgc ctactatgaa ataacaatca      840
gccgctctat ttcttcagcc gtttcaaagc caataccgat ataacttcac cgaacgtcat      900
caccatcatt tgctgtacgg gctggaagct ccagcagtaa gaatatcggt aggggagtgg      960
tggccgatcc tactcgtccg cttatccggg aaacaacagc tatatccgcc ctcgtcccaa     1020
ctataaatc cggcttcggt ctatgctgca ttctttgtcg aggacagggc ttctgtcgat      1080
ggggagccaa taggctgggt attcaggccg gactgaggc tacgcattat tcaatctgcc       1140
ttcgtcctat gccctctctc ggaagatgct gatagaccgc gtatcaaggc caactggcag     1200
tacagagccg aacatctgtc gataacctgc gtgccggata cggtatggaa aacaagttgc     1260
ctacactgga tcattgtatc cggacaagat ctaccgtgac ttcatggtgc tgaatgccta     1320
tatcagaatc ccgaactgga tcatctcatc acttatactt atatccacaa tccgagaatc     1380
ctgctatcag ggagaaccgc aatgtcaaaa aagagatcgg ctagatatga cgtacaagcg     1440
tttcgacttt tctttgacac tcttccacga gaatcgcgac gcggtttcga gtatttcgac     1500
tcctatctgc ctatagcctc gaccgctata ccaagctgat agcccctctt cctccgggac     1560
acaaaccgag aaggaggatt atattcagga gcatcacaag gatttctttg ttatcccacc     1620
gtgcagaatt ctgccaaagt agtcaagcgc ggtatcgaat ttcgttgcgc acaccttatc     1680
tgaaagccat caatacccaa gtcgaagtca atggacctat taccatacgc tctacgcttc     1740
gggtatccct atcatgttcc gaccgatagt gtcggagtac gagcaggctc tctatcctta     1800
t                                                                      1801
```

(2) INFORMATION FOR SEQ ID NO:1073

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 611 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...611

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1073

```
agttgtaaat cccccttgag gagctgcttg cacgagctcc tcaagggtgt tataccttat       60
cctagagatg aggacataat tatccccggg gttctgtaaa attaaaggcg atgctttcaa      120
gaatgttttg agtatgggtc ttggcaatcc ccggtatcga catcgtccgc catgaaacca      180
ccggcgaata ctgccaaggt gcgttcgatg gtgctccgta tctccacaag gcttgcatcg      240
acaagaccct ttccctgacc gaaatgtgat ggcgggaaag ttgtttgtta aactcgccaa      300
tagtttgtcc atgagcccca actctgtcag tgccgaacga aatgactgat ggtgctgtgg      360
tcgggagata cctcttccat agccccaaga atgggaaaag gtgattgaat cattgatgcg      420
ctcctncaaa gcacaatcac taggttgtac catgtcttcg gaagcaacat cttgaataag      480
agaatcacgt ataagccggg cgccgatggc attttgtcgc ttcgtgtatt tcttgttgac      540
aagcgtcctg atcggacgcc aatcgataag cctgtcaacc tgattgagaa gtcgttttgt      600
gctttgcgat a                                                           611
```

(2) INFORMATION FOR SEQ ID NO:1074

(i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 842 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...842

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1074

```
caatgagtgc caatcatgac ttatagcgga atgaaacttg gtcatcgttc gggcatggcc      60
gaaggccacc ggaacgctct atcccctgtt ggctccgcca taggtgccgt aggaaccttt     120
tgtcacaggt agcgatactt tggtccatat cctctttcgg caagttgcag gcaggagtag     180
ctcatcagat cggtgtgatg cccagtggct ggctgcagcc aatacggcag gagctacggg     240
aggaagatca tttcgccaca gagcattgcc attgctacgg catcttgcaa ccaaagggcg     300
aggaaggcag catcctccgt tctgccattc cttatgctct ctttatgtgg tggtcgtagg     360
tctgatggtt tacttcctgg cctaaggcta tattataatc gtataatcgg cggtttgcag     420
tcggtatttg caagaggtct tcgaacggct tctccttacc ggagaccgtt gcacaataac     480
cttccacctc tcatatcgat caagacagac acaagcattg atttgacgaa gaaaggaaga     540
tttcatgcaa tctcttcaaa gctcaagtat acctctgatg gaaacttggg aaatttctgt     600
ttgcttggta gccatatctt gaggtttgat ctttcctaaa aacacttaag aatcagctct     660
gcggcaaaag acttcaatga aagtccataa aatagttgca aatagctgat agttagcgca     720
ttgatgggag cagaacagct gacaatcgcg tcctgcatcg tgcaggaagc aagaatcagc     780
tgacatcgcg tcctgcatcg tgcaggagca agaatcagct gacaatcgcg tccgcatcgt     840
gc                                                                    842
```

(2) INFORMATION FOR SEQ ID NO:1075

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 267 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...267

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1075

```
gatcggacgc caatcgataa gcgtgtcaac ctgattgagg aagtcgtttg tgctttgcga      60
```

```
taacgctttg aaaggagtgc gtctgcaaat gttacatgtc atcggtattc ttggattggt      120
atgccatggg aggaatatta tgctgnttta atactcaaat atacaaaata actccctact      180
atacaatcaa ttaacagcaa aatacacacc aattgccgtg caaaggtctc tataaaatac      240
ttgaaatgct acaacccaaa gagctat                                          267
```

(2) INFORMATION FOR SEQ ID NO:1076

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 593 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...593

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1076

```
gcaggaagca agaatcagcc gacaatcgcg tcctgcatcg tgcaggaaga agaatcagct       60
gacaatcgcg tcctgcatcg tgcaggaagc aagaatcatt gacaatcgcg tcctgcatcg      120
tgcaggaagc aagaatcagt tgacaatgcg tcctgcatcg tgcaggaagc aagaatcagc      180
cgacaatcat ttcttgttct cacctatcgg cacaagcatt gatttgacga aaaaaggagt      240
gcttctgtga gtctctgcga acctcaagta tccacctctg aaagaaactt ggggaatttc      300
tgtttgctcg atgtccatat accggaggtt tgatctttcc caaggcacta agaatcagct      360
ctgcagcaaa agagttcaat aaaaatcccg tgaacaagtc tcattaagtg ttttcgattt      420
atatatgatt gaaaatggtt ttatataaat cgcaggtcga aaaaggccaa tatatgagct      480
gagtgtagat ttcattgtca tttaatcatt tgtcaaagag ctttacaaag ggaccgaagc      540
tctatccatg tatataaatg ctcgctgaaa gcaagttcta tcggcattca atg            593
```

(2) INFORMATION FOR SEQ ID NO:1077

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 467 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...467

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1077

```
ccggtgagta ccgtttcgct ggtggcatgt accatggctt ctaccatatg ccgtctttga      60
ggaactggac gccgtcgatg cttgcacccg gtatggtgtc tgctcgaacg tttcggggtg     120
catgaagttg tatcccatct cgtcctgtag aggtactgat agggacgtcg ttctattctg     180
acctcttcga ccttgagccg ctgttccagg tcttatcgag gatacgtcct gtagccacgt     240
tcttggtttg gtgcggacga aagccgggcc tttgccgggc ttgacgtgaa ggaatcgacg     300
atgaagtagt attgtccctc aatttcgaga cacatgccgt tgcaaagtct gccgttgtag     360
ccatttgggt ataatcgctt ttttaatgat gagaaagggg taggggcgg  ttctcgaaat     420
actgccgatc cttcgggata tggcaaagcc tcctgttgcg gaggcaa                   467
```

(2) INFORMATION FOR SEQ ID NO:1078

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 479 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...479

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1078

```
ggcgatataa ggtttgagaa aagccttgcg ccggatctcc gccaatccgc tgaatcggaa      60
ggaatctctt ccggtacgat ctgctcgatg gccatccctc ctcatttccg atcataaact     120
ctatgtccgt aagtgaagta atcttttggc ataggaaata ctgtcgagca tctcgttgga     180
aagacgacgg atcagcccag attttctttc gtgaaggtat tgtcacagtc ggtcaataca     240
gcagctagtt atcattgccg aaaacggatt tgaactcctc cgtcttgatg atcaaggatc     300
gtcctcgaga aaatagtcct cccaagaggt tttgatacta aggaacgcaa tccattgaat     360
ccaagaagga gaaaaaagaa aaaacctccc aaacaatcca acgcttgcgg ataatccatt     420
cgccacgatg gctaaaccac cgttaatgcg ttctattttc attgctttgt ctcgttgtg     479
```

(2) INFORMATION FOR SEQ ID NO:1079

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1708 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
               (A) NAME/KEY: misc_feature
               (B) LOCATION 1...1708

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1079

```
gcggggtacc ccgcgacctt ctactcgtac gattactgct tgatcgccct atgtaattct      60
gataatctca tgatagcgca aaaatactaa ctaaaccatg aataaacgag aaatacaatt     120
tattattaaa gagactgttg cacaataccc tctccccctc tcatattgat caagacagac     180
acaagcattg atttgagaag aaaggagaag cttcatgcaa tctctctgca aacctcaagt     240
aatctaaaaa cacttaagaa tcagctctgc ggcaaaagac ttcaatgaaa gtccataaaa     300
tagttgcaaa cagctgatag ttagcgcatt gatgggagca gaacagctga caatcgcgtc     360
ctgcatcgtg caggaagcaa gaatcaactg acatcgcgtc ctgcatcgtg caggaagcaa     420
gaatcaagct gacaatcgcg tctgcatcgt gcaggaagca agaatcaact gacaatcgcg     480
tcctgcatcg gcagggagca agaatcaact gacaatcgcg tcctgcatcg tgcagggaga     540
agaatcaact gacaatcgcg tcctgcatcg tgcaggaagc aagaatcact gacaatcgcg     600
tcctgcatcg tgcagggagc aagaatcaac tgacaatgcg tcctgcatcg tgcagggagc     660
aagaaacagc tgacaatcgt ttcttattct cgcctatttg acgaggaaag gagtacttct     720
ctgatggaaa cttgggaaat ttctatttgc tcggtaccca tataccggag gtttgacctt     780
tcccaagaca ctaagaatca gctctgcagc aaaagagctc aatgaaactc ccagcaacag     840
tcttaccgca gatacgattt ctacaagaaa taatatgcga aggcaagact cctatatcca     900
aggagtctgc gccttctttt ttctaaacct cacttttag gctctgctta gtgtcggaat     960
tttttacag atgagtcgtt tttctatttc ctttccgaaa accgcgtcct gtatcgaagt    1020
caaaatcatc tcatcacctt cttcccaacg attgcgaatc ctgctttcgg aacgaggttc    1080
ccggcattgc gttgcgacgg aacctctttg tgttgtttag gacgcggttc tttcgctttt    1140
catcctgtct gccttgattg gaggcggagg gagcgaccgt tcctcatatt tgcgcaggga    1200
gatttcttca cgaatgagat ccttgtagga atgtcaatat catcaagaag aacaatgtct    1260
ttttcgcaga ccaatccgtt aagcgagcga ttcgaccatt gattttcact cttccttcgg    1320
tgagtatttc tctgcttcgc ggcgggagcc gagtccggca tcgctaatca gctattaatt    1380
ctcagtttca tctgaattca aatcagtaag tgtggaaact atttgttaat gataagttga    1440
ggttcaatct gagtacggca tgcataatcc tgcggaagca gggtttattg ccgaaacgg     1500
agcaaggccg gcaatccaat ctgctccgat acaatcttct atgcgctgac catatccgag    1560
aaatcctgtg ccggatgcgt ggcacaccag atggagataa ctcgtgtacc taccaatatg    1620
cgaagtgcat attggcacta tccattgaaa ccatacagcg caaggctgaa taagagatag    1680
ctcttccgga gcgacagcag accggcaa                                       1708
```

(2) INFORMATION FOR SEQ ID NO:1080

       (i) SEQUENCE CHARACTERISTICS:
               (A) LENGTH: 2419 base pairs
               (B) TYPE: nucleic acid
               (C) STRANDEDNESS: double
               (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

       (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
               (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
               (A) NAME/KEY: misc_feature
               (B) LOCATION 1...2419

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1080

```
ggcgtatcgt ggagcaagga cgccacgatg aactgtatgc cctgggaggt actacacgaa      60
gctatgcgat atgaacgcag aatgagaaaa tgatactttg tgaagaaaag aaaaccgatg     120
```

```
gactacaaga ctcgcatcat atatgcctgt tgaaaagcag gctgaaaacc atcgacacct      180
atgcctctcg agctgagaaa tacaagaccg ccagctcagg cgcatcctgt cgagtgcagc      240
ctacaatcca ccggtatccg ctacgggttc aatcgcataa gctcgaaaga gtgtttgctc      300
gcaacgtacc tgttcgcgat tacgaatcga cacaagccga aatgaacgaa tgcttcgtgg      360
cgaaaaagac gtgctctgtc cggggcgttg taatggtttg ccaaaagcag cggcaccacc      420
aatagcaaaa gcaagttcat cccgttccat accgccacct gcactattgc cattatcaag      480
gggggaaaga tccctatcgt tatacctacg caatagacct gacagtcgtt tcttcacgat      540
aaagggttgg tactgggtgg cagtcacgcc cctgtatcca tgaatgccat atacaagtcg      600
gcgacttgag tgccatcctt gtcgagaata tgcctgtctc ggcaactgca tgcgcgtacc      660
ctcgaaagaa acgctcttga tggacggtgg acggagaagc tcaaagccgt agttcgcgaa      720
gtggcgcatg tacgatcgga agcttgtccg gcgtaccgtc ttggatcctt gtcttgatca      780
aggagtactc gcagctacag gccgagagac tttgtcggat gtatggccgg aatggaagta      840
tttttccacg gcggtatcag ctttgctccc tatcgagcgc agatgagaag ctgatacctt      900
cttcacggat gcagtatatg gagacgtata agcttcggaa ggtttcttcg gtattcagga      960
tgatccgaag gatagcggta gctgctgatg ctcgattacg gagtttacta cgaattcatc     1020
ccgatggaaa tttcggccgc cccgaagcgg aagccatccc actcgaagga gtggaaaagg     1080
gcgcaattat gccatgatta tcagtacgct cggaggactc taccgtttgt actgggcgat     1140
accgtacgat tcacatcggt gaaaccatac aagatatcat caccggtcgc accaagcact     1200
atatcaacgc attcggagaa gagctatggt agacaatagc gacaaggctt tggcggcgac     1260
atgcaagcga tttgcgtgca ggcagtggac tatacggtag cgccccactt tttttcggaa     1320
gaggcaaagg acggcacgac tggctgatcg aatttgtctc tgcaccggct gaccgaatgc     1380
gtttgccaaa gcattggatg ccgagttgca aacgctcaat tcgactacga agccaagcgg     1440
tatgcagaca tgactctgct cccactctcc tgacgatcgc tcgctccggt ctcttccacg     1500
attggcttac ggagcaggga agctgggagg acagcacaaa gtgcctcgtc tgagcaatac     1560
accggaaaaa tgaggtctat cctcgaaatg aacagttaat cgcatcttcc cgattatggc     1620
aggggggagat gtttccgaac aaaagaatca atgagtaaaa agaaagtaaa agcaagacta     1680
aagcccgcaa gggagacgct cctcgcatca accgtccggc cgtaggaaca agcgcatgac     1740
caaggaggag atgcgcaatg ccatttggac atattccaaa gcaatcctca gagcgtgatg     1800
aactacaagc aggaagccat ctgatgggag tagaagctgc accacaaaag ctaatggtga     1860
acccctgatg gaagacatgg ctgtggatga catcctgcat gagatagagc gggacgctat     1920
cggtacaatg ccttgggatt gattgtcata ggcacttttg gcgtcggttc aatggccgca     1980
attcgtttat tcccgaaggg ggcggaacgc cattttcatt gccgaaagaa attcggcaca     2040
tgccatggac ggtgacaagt gaaagtacaa ctctttgcca aacgtcgtgg tcgcgcgccg     2100
gaagccgcgt gatcgagatc atagaacaga agcaggccac tttcgtcggc aagatcaaat     2160
caatagagac tttgctttcc ttgttacgga agatcgcacc ttagcaatga tatttcatc      2220
cccaaggaca acctcggcaa cgccaaaaac ggcgtaaggt aatagtccga atactcgaat     2280
ggccggagca atccaagaat ccctcggaga ggtacaagcc gtattgggac cggccggaga     2340
caacgatgcc gaatgaatgc cattttggcc gaattcggat tgccttatgt ctatccccaa     2400
gggtggaaga ggcagccga                                                   2419
```

(2) INFORMATION FOR SEQ ID NO:1081

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 426 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...426

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1081

```
gtccttgcct gagtctgacg actaccttac cgtggccgga tttatcctga tagccatcaa    60
aatatcccac aggccaatga ggtcgtggag attgctccta tacttttacc attctcagat   120
cttcttccac caagatcgaa ctggtgaaat gtccatcgac gaccaatcga actaaaaaac   180
aatcagttga aaggctggca ttttgaagcc ggtttgtatc tttgtggctt aataaacaca   240
ttcttatagt gcataataaa tagaaaacat aataacaaaa tggcgacatt agagaaatca   300
gaggtaaagc cggtttgctc atcgtantgg tgggcgtggc tcttttgcct ttattatcgg   360
agacttcctt cgatccggat ctactttctt cctcagagcc aagaaattag tcttggatat   420
caaccg                                                             426
```


(2) INFORMATION FOR SEQ ID NO:1082

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 574 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...574

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1082

```
cgtaacggct catgacttat ccacacgacc ggccgtatcg acaagtttgc cttgcctgta    60
agaacggaat gcgacgtatt ggagatttcc actttgataa agggtaagta acgccgtcga   120
tctcgatcgt ctcctttgcc tccatcgaga gcgtgtgata aagatgtctt cgttggacat   180
atccttaaac accaccgacg ataattttcg ggatgaatac cttttttcat tgctgtctat   240
ttagtttgtt cttgtttttcg ttcgctattg acgtactctg gattggtaac cgttgtttat   300
aatcggatag agatttccgg acggcaaagg tagggatatt atttacttgg caagcagtta   360
ggccgagtca aaaatgagtt cgatcattca tgcggacatt catgctctta agataagcag   420
gaggggacgc atgctcgtgt agtcgatgaa tcgtgtgtcg gatttacgaa ccgcaatcgt   480
tgtaattgtg cgcgagaatt ttgaaaaagt ggaacgtaaa ttatttcgtt ttggttcgaa   540
tttttttttgt tcccgaacca aaataaaaaa attc                             574
```


(2) INFORMATION FOR SEQ ID NO:1083

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 796 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...796

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1083

ggcagatgat gatacacggc aagcgcaaac aggctgcggt ggagaccatg aggagaccgg   60
ttggccggtg ctattcagtg ctctcaccac ttttgttgtt tgctttcttt tctggctatt   120
cccgtcgtac cgatgcactt tatcggttcg ccacttctgc cagtgtcctc ttctccttta   180
tgatcgccat tacggtatgc cgactacctt gagtttcggc aaagaccatc agccgaaagc   240
atcaggcgaa aagaaggaaa gcatcggctg gatcgatggc tcgaagcctt cggtcctggg   300
tgttggatca tgagaagtct gtctggggtg cttttatcct tatacagtgg tgatgctctt   360
tggattcttg aaaatggaga cggcattcga catgaaagaa caatggggcg acggatagaa   420
tacgtcagca atatccttgc ctgagcgaaa gcgaattggg ctctctttat tcctatgata   480
ttatgatcga ttgggagagg agggaaaggc caagaccccc gaagcacttc gtgctctcgc   540
agcatcgctc gccatgcaga ggcatattcc cttaccaagc gtaccactcg atattgaata   600
tcctcaagga tctgaaccag accttgcacg atggggacag gcatactata gcattcccgg   660
cgatgcggag gaaagtggca ccagcactcc tcctatatga gaatgcnggg ggggagtgaa   720
gcccgaaagc tggatgactt acgaatacca gaccggttgc taccctgaaa gttgggaaaa   780
tgacctcttt accaat   796

(2) INFORMATION FOR SEQ ID NO:1084

     (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 385 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...385

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1084

gttacaacgt aatcgacttc gtagcggagg gttgttacag cagctccctt gcaattatag   60
gtacaattcg agatgcagta ccgtttttgg ctgttgagga attgccatga tgctttttgcc   120
gtttttagac catgctgctc cacgaactaa tctacttgac cgccggttcc gctgaattgc   180
ttgcttccta tacattggac acgacttgtc ccataagatc gatttcgata cagctattga   240
tgctgccata ttatcatttt gagcgattac tcgcggatca ttgacgtaat ctacggataa   300
agttctacat cgggattttt gtcgatgaaa tgatatacgt cttgcttcca ttaagaaggt   360
tgcgaccatc tttccggggt gaaga   385

(2) INFORMATION FOR SEQ ID NO:1085

     (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 874 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double

(D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...874

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1085

```
actgtcgtca agcgatttga ggaataccgg catgagcatc aggatttgtg ccaatgcgtt      60
ggcaaactgt gcaaaacgaa ccacctcggt accaccgaga gcgtctcgct caaataagtc     120
atctcacggt tggccttggc tccttcctat aagcctttc gagagaagac aatacatcgc      180
catagacagc actcttccgt tcttacggat ccagtctgcg aatgctcttt cctcggcacg     240
cttacaccta tcacgtcaag acgagcgaga ccgcggttca taccgatcga attctccaat     300
agttagcact ctgagcatac ttgctggcat atttgatacg ggtgcctgat ctgcgctcat     360
ggcttccttc cagatgcctt gcttgatacc gcaacttcga tacgaggatt gttctcgttt     420
tcgatacgat cttccacacc caagaagtga ggtagcgatc cgtactgccc gggaaaccga     480
tggtcatggc tagtcgtcag ccttgtagcc ttgcatggat acggcagcga agtaaacggc     540
ttatagggtt tattgtcctt gctgtattcg gccggccggt tgtcggcacg gcatacacgc     600
ggaatacgct gaagtcgccc gtgtgacgcg gccacatcag ttgtccgtat cgcctccgaa     660
cttacctaca gagctgggag gagcaatacc atacgaacgt ccttgaatac atcgtagacg     720
atgaggaagt attcgtgttg gaatagaaag gctctacgat gcagagttgg ttctcgtctg     780
catttctttt ttggccagtt cttggcatac ctcctgagct ttgcgcagac gctcatctcg     840
tcagtgatac ccttgagctg tccttctacc ttgt                                 874
```


(2) INFORMATION FOR SEQ ID NO:1086

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1314 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1314

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1086

```
gaactccccc tagaccaaca acccgaacat ttgctgttta gccatttgcc tcaatagctt      60
agtcccgaag agcgtagagc catcatccgg ctatgccatt accacacacc caatgttggg     120
ctagtcgtca tcgatggcat tcgcgactga tgcacgacat caacaactct gccgaagcga     180
ccaatcttat gggcgactga tgcaatggac tggagagagg aacatccaca ttcaaaccgt     240
tctgctctca acaaaggaga tgacaatgct cgtggacaca taggcacaga actgacaaca     300
```

```
aaacggaaag tgtcttgctc atcaccaagg acaacagtga tgcgacagga gcgttgtctc      360
agcgtccatc attcgctcta agcctttccc tcctttgcgt ttaggctcac cgaagtagac      420
aacatctgcc tacgcgagtt aacacagact tcacggccaa agacgcacag cctttctcct      480
accaagaact agtggtgagg agcatcgcac agccttgcga gaagcctttg gccaggcttt      540
gagttgggct atggcgacct attgaagcga ctcagctcat catacttagt gtcagtggtc      600
gaccttatgg acagacgaag ctcaaagaat tgctccgttt ctcgtgaaca aacgtatgct      660
cgtcaaggct agcagaggac gctatcgttc aacccagact tccattactg acacatcggt      720
tcggtcgggc gcaggtatat atgcctgacc aaccgaccaa ccataaataa agaatggtcg      780
gacgaaggag tgcctatagt aaacgtccga ccgaccaaag aagaaccgcc aaaaaaaaac      840
agcatgcagc tacacgacat caagcaagtc tccatcgtgg acacttagca caagctggct      900
ttgaagcaaa gctcatcaag ggcgtgaact atggtattgc tcccctctac gctcagagct      960
cacgccttcg tttaaagtca tgcagagcgc aaccaatggt atgacttcgc cacaggagac     1020
cacggagact catcgacctc gtttgcactc tccagcattg ctccacagca gaagctataa     1080
acggctatct gcgctgaagg gtgtacggct agcaccgtct ttttctttgg aggaataact     1140
cccgtaagcc tacaaagatc ctccatggag ctcatcgcgt acaagctgtg aagcatccca     1200
agctcttact gtatctctcg gagcggggct acagccctct gatgcctctc ccttcttatc     1260
ggaagtctat tacaagtctc taggaagtgt ttctttgccc ggggatcctc tana           1314
```

(2) INFORMATION FOR SEQ ID NO:1087

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 393 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...393

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1087

```
gccgccgatg cattaagagc agaagccaag gcttccgtac tgattacaca tcagcgattt       60
tgagatccgg aagatttatt ttcttccctt ttactttgct tcgaaggtta agaagagttc      120
actcttgtcc atggccggct tataaggaaa gagaatacga gctgctgatt gccaccattg      180
tcatagctga ctacacctca ttgccaagta cttttttctcc ctgaaaaagg aatgaaggtc      240
cccatattca cctgtagcat agcgcagcac aggcttcact gtaagttcgg ctttttattg      300
aaccatttgg caggaaaagc gatactcacg gtcacaggca cttgcttccc acgacttcag      360
tggttgtggc tcagccttta ccaaatcggc agc                                   393
```

(2) INFORMATION FOR SEQ ID NO:1088

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1343 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...1343

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1088

```
ggttatgagt ctgcgtcatt tctgtgggac tgttggtctg attcgttctc atcccccact      60
caagaaaccg atagccatca agaggaagaa aaagatttac tttctcattt tctactcggt     120
attagtgaag agaatcgaat ttctcgttgt aaattatcgg gaacttaagg taatggaaaa     180
tcctatacct tttgttttcc tataaaacag cacttctatc gacaacgata tgaaagnang     240
atcaacaact cctacaggaa atcggtcagt gtgtggctgc caccgtggag gaagcgaagc     300
tctgcgaatc aagtatctaa gcaaaaaggg cgaaatagcc cgttgttcga tgacttccgg     360
ctggtaccgt ccgaagagaa aaagcaaatc ggcaaatgct caatgagctg aaaaacaagg     420
ctcaggagca tatcaactcc ctcgcgagcg ggcacaggca ggctctgcac aagcttcggc     480
agaaaccgac tgacacgaac atcatacccg acgagactcg gaacacgcca tccgatctcc     540
tggtgaagca ggagatctgc gagatctttg cccgcctcgg cttcagtacg ccgacgggcc     600
ggagatagag gacgactggc atgtattctc ttcgatgatt tcgccgaaga ccatcctgct     660
cgtgatatgc aggacacatt cttcatgagc atcgccccga tgtcatcctt cgcacgcata     720
cgtccagtgt ccaaaccggg tgatggaaaa gacacaaccg ccgattcgcg tcatttgccc     780
cggggtacct accgaaacga agctatctcc tatcgggcgc attgtttctt tcacaggtgg     840
aagcactgta tgtggacaag gatgtttctt tcgccgattt gcgcaggtgc ttctttactt     900
cgcacaggaa atgttcggag ccgaaaccaa atacgccttc gcccttctta tttccccttt     960
accgaaccgt ctgccgagat gacatctcct gcaatatatg tggggtaaa ggttgcaact    1020
tctgcaagct acgggatggg tggaaatact cggatgcggc atggtggatc ccaacgtatg    1080
gacaactgcg gcatagacag caagaaatac agcggctatg cgctcggatg ggtatcgaac    1140
gtatcaccaa tcttaagtac cgagtcaaag accttccttc ttctcggaga acgacctcaa    1200
cttcttggaa cagttcaaga gcgtgactaa ccctctgatc agtatcgaat gcgcaaggaa    1260
gagcgataca aagcgttatc gattggtttg ccgagaatat gccggtggcc gaaacggagc    1320
tgcgtaccgg gatcctttcc agt                                           1343
```

(2) INFORMATION FOR SEQ ID NO:1089

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 647 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...647

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1089

```
atctctttcg gtacggctca cacggtcctg ggtaatgtcc ggaagctccg tacgtcttgg      60
ctaaggatac ccattacgga cctttcggcc caagggtacc tttaacggca tttgccagtg     120
```

```
catctacgcc cttcttcaga aggtcgcaga ttccatatcg aatttgattt cttttgccat      180
agtctttatt atttatattt attttttttc tttttggag gattattgtc tcttccttta      240
ccactgggtt tcctgttttt gaaggccaac ctgcagtgtt aacttgttct ttgattcttt      300
tgccatagtc tttattattt attttttct tttttggagg attttgtctc ttcctttacc      360
actggggttt cctgtttttg aaggccaacc tgagtgttaa cttgttctga ttttttttgtt     420
ttgcccatta gatgattgcc agacatcgtt ttggcgcatg atgatatatt tttcaccctc      480
cagctctatt cagtgccggc atatttgccg tagagtacgg tgtctcctgc tttgagcaca      540
tctcttcgtc tttcgtgccg ttcccgacag cgattacttc acccttgaag gtttctcttt      600
ggccgaatcc ggaataatga tcccgctcac tgtttttctt ctgctgc                    647
```

(2) INFORMATION FOR SEQ ID NO:1090

        (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 289 base pairs
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: double
             (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...289

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1090

```
tgacaatccc tcattttttc aaaggtctct atatcngttt tactcgtcgc gttcgattgt       60
tttctttccg gccggggaaa gtttccccga cagccgacaa aataattttt ccggccggaa      120
aatctctatc caaaggtttc ggatatgatc caaagccttt gaatacatat ccgaaagctt      180
cgtttatata tccgaacctt tgaataaaga attggattat ggcttttnca acttttccgt      240
actgcgaaaa aactttttc ggccgggnac gattatttct ttttataaa                  289
```

(2) INFORMATION FOR SEQ ID NO:1091

        (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 897 base pairs
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: double
             (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...897

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1091

```
acgatcggca gagagaccag cccgacgaag aggatgggca tcaggatcgc atcacgagga      60
aggatttctt tcggacgcga atcatgtatt cgcgttgttg atagtgttaa tgttgttcat     120
aacgtcagtg tgtatcggtg gtttcttttg tgcttggatc ggattctctt cctctacgcc     180
gtggcctacg gtcttgtgaa tatgtcgtgc atgctcggga tctcttcgta gaaggacacg     240
agccgaccga ctcgggcagg tcgcgcacga gatcgcggtt gtgcgccgtg gtttttttgcg    300
cactctcagc ttcgtcatgg aacccggtag ctccgtcttc tccgtatccg gatccggccg     360
aggtagtctg ccggcagctc gccttcgact acatgcggat aatgccgagg ctgttctccc     420
tacgcacttc gcgcacggct cgtggagcac tacgcgcgat ttgttgatca gtgcgaagtc     480
gtcgcatact cttccaccga ctgcatgttg tgcgtcgaga agatgacggt acgctccttc     540
cggccagctc cagtatttca cgcttcagca ggtcggcatt gaccggatga atccgctgaa     600
gggttcgtcg aatatgagca attccggttc gtgaatgcgg tgcacacgaa ctgcaccttc     660
tgctgcatcc ctttggacag ctcttcactt ttttgttcca ccaaggcatg atgtcgaact     720
tctcgaacca gtcgggagcc gcttgcgcgc ttcgtgcttg ttcactccct taagttgcgc     780
tagaagatgg cctgctcgcc cactttcatc ttggggtaca gcccccgctc ttcggcaagt     840
agccgatgcc gcgaatgtct tccgctgcat gggatggccg tcaagatcac ttctcct       897
```

(2) INFORMATION FOR SEQ ID NO:1092

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 605 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...605

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1092

```
gcacgtcctg cagtctgcgt gagcgaacga tgcgagcgca ggaatccttc ttatccgcat      60
ccagaatagc cacaagcgaa acttccggca agtccaatct tcgcggagca gattcacccc     120
gatgagtgca tcgtagaccc ccttgcgagg tcttccatga tacgcacacg ctccagcgtg     180
tccacatcgc tgtgtagtag ccggtgctga taccgtggcg tagcaggtat tcgctaagct     240
cctctccata cgtttggtca gggtcgttac cagtacgcgc tctttctttt cgatcagcgt     300
gctatctcct ccatcagatc gtccacttgg tttgccgtcg gctgacgtcg atgatgggat     360
ccagcagtcc ggtcggacgg atcagctgct cgcgatcacg ccttcgcttc tgttcagctc     420
ataagtcggc aggcgtggca cgatataaag ggtccggggg gtgagagctt cgaactcgtc     480
gaagcgaagc gccgattgtc gagagcggca ggcaggcgga atccgtattc gaccagattt     540
cttgcgcgaa cgatcgcctc cgtacatggc acgtatcttg cggtatcgac atggctttcg     600
ctatg                                                                605
```

(2) INFORMATION FOR SEQ ID NO:1093

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1539 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...1539

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1093

```
ctttggggaa agaaagaggt aggaaaacgg ctatcaggtg atcaggaaaa agccaagcgt      60
ttgcttcttc cttacctctt tatggggacg gtggcattct gcctaaagtc ctactgagtg     120
cctacacata ccacccgatg aggcctcttt ttcggatatg tcagcagctt tcttttttccg    180
gcaacgaatg ctattccttt ctgtggtttt tgccctgctt gttcagtcta ttttgcctgg     240
ttgtttttat cctcggaagt ggatggaggg accgaagatt ttcggagctt acctatcgcc     300
tgccttctgc atatagtcac cgaatacatc cctgtggcat tcgggatgat cctttctgta     360
ttatagcagc ctttaacaat tttcactact tcttctgggt atgatgttat accgctattc     420
cgatcgtata gtttccagac ggtatcggta gccctgctta tcgctttcca tgtggcactt     480
ttctcccgtt ctttatgccc gagcagtcat cgttcttggg ggtattgaac tggtcttata     540
taccctgttc atcgttgtcc tttatggcgt gtcggtaaaa atcggagaaa ggtgatgcct     600
gctccattgc ttcacggtat agggttgtac agctatccat attcattttt tcatggttcg     660
tgctggtcgc attgagaata gtccttatga ccgctatgag ctgagcacca tgatgatcaa     720
tggagctatt gccatagttt catagccggt ttgttcatac cgctttacct gtccaagttt     780
ttggcaggaa acttccggtt tctctcaagc cgctggtcgg attgtaagca gaccagagga     840
gctgcgcaag aagggaaagt taaggttcga acttacgaag agaaaactat cgataacgaa     900
cggacttaac gacatgattc cggccgaatc aggaagcctc gcaaatagcc atagacacgg     960
ctcacactcg cagagtccgg actgaagttg tcagcatatt tattcccgga ttcacaggtc    1020
ggctgaccga agaacggtat tgtcggtgca aaccaattgg agaaacatct ccatcgttca    1080
tcaggacgaa gttgtagacc tctcagcctc gtgacaaatt ccaatcggtg ccttccttat    1140
aagctgtacc tggggtgatg atgaaagacc tgttcagaat ggcatctccg gccggtagaa    1200
acacgtacta tctccggcca gcatatgatc gaatccagtt cgtagaacga accatcgagc    1260
atatccatcc cttttctca cgctccaacg taatctgctt gtccagatcg attcgctgct     1320
tttcagttca tcccgaacgc tttggcagat ggcgatatac tcttccaaat caggcgacca    1380
taccacatca gcgtgctgtc gtaatccatg cgagtagtgc ctacttggca aacagattgg    1440
gtgtaaaccg cttcacgaac actatccgtc attncggatc gtatatatta gcaaagtgac    1500
catcggccac ataaagttca ccatcagatc cttcaactt                           1539
```

(2) INFORMATION FOR SEQ ID NO:1094

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 605 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:

(A) NAME/KEY: misc_feature
          (B) LOCATION 1...605

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1094

gggaatgtct tcttcaatca tgttcgcaat cggatcgatt tcacctacaa ggcacagatt   60
tgatctacac caacgtatcg aaagaaatga gaatattcgc tttgaaggac aagcgaatgt   120
ggtactgcct tacggctttg gttttcggct tcatattcct acacttatga tcgatggaag   180
gcgaccgata aggccgaact gagatgaagc tctcaaacac ccgccctcat gcagctactg   240
ccacttctct tatggacata atttttcgaa gaattacaga ctagcctcca actttccacg   300
cgcttccttt ccgatctgaa aacagggcgt atgaactccg acggttgttt gaggaaataa   360
cgtatccggg ttatacgatc tgtcgtttgg atttgaaaat catttctatc ggaactatac   420
gctccatatc ggtgcggaga actgttcgat tataaaccca aagcattggc attcaattcc   480
ccgacatcac cggacgtatc atatacgggt tggttcggat cactttctaa tacgacttat   540
tgcaacagaa atataatttc gccacgatga agaaaaaata atttatcttc ggtagccatc   600
ttatg   605

(2) INFORMATION FOR SEQ ID NO:1095

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 590 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...590

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1095

gggctgggca gttgctggtg tcaggtcttc ggatcgctta caccgaatgg caggaggcta   60
ttcagtatgt gcgcaatacg ctgaatattc cctatcagtg gaagtcctgt gcatcatcgc   120
tatcggacac aaagccgagc acagggaccg cgccctgcat cggaattgaa gtgggagaac   180
gtttttatag gcgaattccc gattgggaga gtgtgtcgca tgattgatcc tgtaggactg   240
cccgaacttt cgtgcgcata gtgcttgtcg gcagtggaaa tctggctacc caaaggctct   300
ggccttgtcc gaagccgcca gtccgcccgt tcaggtatgg agcggaatgc cgagcatgcc   360
gaacggttgg cttccatgct gccgggagca acgctaccga tcggacagag gagctactct   420
gcgatgcaga gctttatctc ctgcagtgag cgaccatgct ctcgaatccg tagctgctac   480
ccttccgccc catcgggaat atgggcacat acggctggca gtatgccgat ggataccctc   540
gcccttatca tgcgcagatc ggggtcttct atcctcttca gacattcacc   590

(2) INFORMATION FOR SEQ ID NO:1096

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 1104 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1104

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1096

```
cggtgtaagt cgccaattag gttcttctat gaaatctgtc ggagaggttt ggccatcggt      60
cgcaccttcg aggaggctat ccagaaggga ttgcgtatat cggtcagggc atgcacggtt     120
tcgtagagaa caaagagctc gtgattccaa tatagacaag gcactgaatg agccgaccga     180
cagacgcatt ttcgtctaag caaggcattt cgtcaaggtt acacggtaga taaaatacat     240
gaactactaa gatcgatcgc tggtttctgg aaaaactcta tggtatcgtt accctgcaga     300
ggaaatggaa gagttcgaca agctcgaaga tctttcacct gcttttggc tgaggccaaa      360
ttgcgcgggt tttccgattt tcaggtagct cggctgtact caagccggat gctacttcga     420
tggaaagcgc aaccaatcag gacgtgccat gcgaaaggag ctgggaatcc taccggtggt     480
taagcgtatc atacgcttgc agcggagtat cctgctcata cgaactatct ctacctgact     540
atagtggcga tcgtcatgat gtagcctatg agacgacaag cgttccgtgt tgtactcggt     600
tcgggtgcat accgtatcgg tagctcggtg gagtttgctg gtgtggtgtc aatgctctgg     660
ctaccatccg taaggaaggc tatcggtccg tcatgatcaa ctataatccc gagacggtga     720
gtacggacta tgatatagtg acaggctcta cttcgacgaa ctgacattcg agcgcgtaat     780
ggatttcttg aactggaaaa tcctcatggc gttattgttt ccacaggggg acaatcccga     840
acaaccttgc agttcgtctc gatgaacagc atgtgcccat ccgggtactt ccgcacagag     900
tattgacaat gccgaggatc gtcataaatt ccagccatgt tggataaatt gggtatcgat     960
cagccccgtt ggcaggagct tcttcgatgg acgacattga cggattcgtt gccgaagtcg    1020
gttatcccgt ttggttcgtc cgagctacgt cctttccggt gcagctatga atgtgtgccc    1080
aatgatgaag aacttcatcg tttc                                          1104
```

(2) INFORMATION FOR SEQ ID NO:1097

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 4902 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...4902

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1097

```
ggcttcgata ctcgcagctg tgggatcttc tccagcattc acgagcagat gcggacatca      60
accgcggagt cgaccgatcg gatcgatccg agcagggacc ggagaccaag gtatgatgtt     120
cggctacgcc acgaacgaga cggagaatac atgcccctga cagtggatct ggcacaccac     180
ctcctctacg aattggcgct atccgcaagg agccttcttc tccgatgcct tatttgcgcc     240
```

```
ctgatccaag agccaagtga cgatcgaaca tgacgatgaa ggcagacccg tccgatagac    300
acgatcgtga tttccaccca gcatgacgaa tttgtccaag catggacggt atttcagaag    360
cagaagccga ccggatgatg caggagcgca tcatcatgac atagctacca tactgatccc    420
ccgagtgaaa atgctgtaca accggagatc gcagccctat tcgacgaaaa ggtacgccta    480
ttcgtcaatc tacgggtaag tttgtgatag gagggccaca tggagacacg ggcctgacgg    540
acgaaagatc atcgtggata cttatggagg cagggcttct catggcgggg agcattttcc    600
ggcaaggacc cgtccaaggt agatcgctcc gcggctttgc cgcccgacac atagccaaaa    660
acatggtggc agcgggcgtg gccgacaaat gcttgtacag gtagcctatg ccatcggtgt    720
agcagagccg gtaagatata cgtcaatacg aaaggccgga gtcatgtggc tctatcggat    780
ggccaatagc ggagaagatc aagaagattt cgatatgcg tccttacgcc atcagcaacg    840
actgaaactc cgcaatccga tatacgaaga gaccgcagca taggccactt cgggcgcgaa    900
ccctacgaag catacaaaac ctttgtcgat ggcacggaac ggaacagatg cgaatcgtgg    960
agctattcac atgggaaaag tggattacgt agataagatc agggccgagt tcggtctgtc   1020
gtaatcacac ctgcctcctt ttatcgcaag acaaaggctc tgccattgac ttcgcttttt   1080
gctttactaa agcttggcag acagaagctg cttgttcctt tcttagggat gcagagagga   1140
agtttattct accggttttt cacttcatca gctacaagac gaccaacggg gcagcagagg   1200
atagatagat cgtatcgctc actgctcgtt gagcgttccg caccacaact ccggcagagt   1260
ggtattgcga agcgccattt cagcccttcg gccgtgacgg ctgatccgct gaaactgaat   1320
atagaaattt gtctccctcg cttccacttc tatgcgagcc ttcccgttaa aaccaaaaaa   1380
cattccgtaa tccgtaggca tcacgatctt ttcgaaaaag cggtatatcc gggcagatgt   1440
gccagattgc cgacaaaatg atcttcacga gccccgatgt ccccagcaga cagacctcgc   1500
gaggggaata ggtctcggcg agaatgtaac tgtcttcgtc agatcattgg tatcctgctc   1560
gtctatgcat gtagtttttc tgcaggcaaa atatgtcgcg aggctgtaaa agaatccagt   1620
cgcccactac tgcatccggc tctgcaccat agtccagcaa attctgatgg ctccatcgca   1680
acagacgatg gtaccttcag gatgctccga tgctccccgga ggatagcaag ggggaggatt   1740
ttacggggaa attcccccctt agccgaataa caaaaagcgg agctgtctcc ggagtaagcg   1800
agggaaagaa aatataggtc gatgctgatt gtggcctgtc gttgcatctt gcgccaccgg   1860
aatatcccag aacggacata acggtattga cggcaaagac gacagtggtg aatggtcgcc   1920
ggatttatag aaaagggata agctgatgat attggctacg accagcacac ccagtgctgg   1980
cggatgcgac gcgccaacca aatcatccca caaagctgat tacagtggca agcgtatcgg   2040
cccacggcac aagactatcg tatagtggga caacacatag aacatcggga gaaagccac   2100
cgtagcccag caaggctgat ccacaggaca cgcggggaga tggatacgat ggcacctctt   2160
ccgtcccttc gcggtggcga agccacatca cccagccgat aatacggtga tcagatagta   2220
gacattgatg agcacattgc cgtagaactg cgcccgatcg agagataaat gtagaagagc   2280
ggcaggacga tccccacagg ccaagccaga cactcgcctt atattcgaga tagacccaaa   2340
taaaattgac gatgctgctg ccagctcgat gggatgagcc acaatgaatt ggatcaccgc   2400
ttcatcatcg gattagaaat cgattgtcag actacccagt gcattaaatc ggcctgagga   2460
taataacgca gatcggcata tgcacttagt tctccggatc ctgtacgtaa ccggcatcgt   2520
agatgtaggc attggacgca tacatgagtt gaagagatta ttgagctgta cgcccagtgc   2580
cactctctta acgaagtaac cggcagcaca tagccgaggc ggaggtcgtt cacccaatag   2640
gaggaagcat gcgatcgctg cgctgtgtat tgtccagata ttgcttgctg acgaacggct   2700
cgtccaagcc atttcgaaac cggcatgaga gagggtaagc atgcgccggc aatgacattg   2760
ggcgagtagg ctatatccgt gctttcgagg gtccctcctt gagttcgagc cagttgtagt   2820
ccgcatcata tacggatgta tatgtacgta gcggtcgatt ttgttgcgac tcatagtgaa   2880
agaagcatcc cacgcagcaa acgaggaagg atctgccaac cgagagtcag ctccagtccc   2940
tacggtagct gtcggggacg ttgcttgtga gcatctgtcc cacatcgcta aacggccatc   3000
cagcacgagt tggtccttgt attgcatata atagagacta ctccggccga caagaggggc   3060
gaagcatagc ggtagcccag ctcatagcga tcagtcgctc aggcgtagga tactgtccta   3120
ttccggcttc ggtgtattgg ttctgttagg ctcgcggtgt gctaccgcaa cagaagcata   3180
ggcagatgag catcgtcgaa actataggta agaccggcct tcggattgag gaagggaagg   3240
tcttgtccaa atcgatgtgc tgcatacttc cctgtacctc atctattcgt ccgtgatgcc   3300
gtttatcgtg tagccgatgg tacgatactg gagtcggcat acatgttcag ttccggagtg   3360
atctgccagt tggctttggc aaggctgcac cttctctttt gtctgccctg ttccgataat   3420
attcgaagtc ggagctaagg gctgattgta cttttgatg taagtgatac ggccgaagtg   3480
tctcctttat agatattgcc cgaggccccg aactgcaaat cccatgcacg gtgtgccagt   3540
taagcgaacc gatgagtcct ccgaagtcat tgtccagtac ttctgacgga tgagatccgt   3600
tttcttcacg gtcacactgt tttccaatag ggctgcagtg catattcctt tagttacgtc   3660
cggtacgata ttcgtcgtat agccatatcc ggccgtgtag tgtgccgtga ggttgaggat   3720
aacgaaggag agaagctgtg cgtcatgatg gcatggtagt gacgctgctc gtattgtcgg   3780
tattgtggta gtagtgcggt actccttgcg cgtccacgta caaagaccgg cactgttgta   3840
tcggcggcca tatttggctt catcctcctt gaaagaccgt tccatgcgat acccgtaact   3900
tcttttcctc cgaaagtgat aacctgagag ccgtgttgct accgaaatag cccacctgtg   3960
```

```
cgaaataggt ttcagatcca cgcttcctct atccacgtag ccgtccgaac cgattttgac      4020
aggcgggcat ccactgccca atggcgaccg atgcgtccgc taccgagttg accgatcggc      4080
ggaatgtgcc gaacgaacct ccgctcaaat cgacacgcca taaggagcca gtcccaaatt      4140
atccgtacgc atattgacac ttgcccaaaa gctccggcac cattggtgga agtacccaca      4200
cctcgctgca cctgaggtct tcgatggaag aggcgaagtc gggcatattc acccaaaaga      4260
cggctgagat tcggagtcgt tgaggggtac tccattggta gttatgttga tggattggca      4320
tcggtgccac gcacgcgaaa gccggaatat ccgatacccg tccggcatcg ctggtggcta      4380
ccacggaggg agtcagcatc agcagatagg gatgtcacga ccataattgg acttggaaag      4440
ttcggccttg cgaacgttgt gtaagcgaca ggggttttcg ccgtggcgcg agtagctacg      4500
acctgtacgt ctggagctgc acattgctaa gactatctat ctcgctgttg gagacggtgc      4560
ttgtgccgtc aggcagaaag gcaggacggc taaggcggca atcatggaag ttttttcata      4620
aatctcttat cattgaagtt ggacaaagaa gagaggggg aatgattgct tcgccgtgaa       4680
gatagtcaga cggagagttt cctagccggt attatccggt tcaggtgatg agggtttgtt      4740
ctcagccatc caccattccg attgctacag gaagcacccc ttctcccaat tttatgggac      4800
aagataagaa aacgttcgtc cttcagtatt cgggacgata ccgctcggca tttcatcttc      4860
gagaatgctc aagtagctga tatagcggct ctcggctatc cc                        4902
```

(2) INFORMATION FOR SEQ ID NO:1098

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 310 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...310

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1098

```
ggggatctac tgcattacgg aatggctgct cgactgaggc gaagaggtgc tattcgacct       60
cccaantgcg ctcgaaaggg aaaatcttga tttcgatgtt cggcgcttgt ccatttgggt      120
cacttgaaan cggaatggct cgtacacgac tgtatcgccc acatgggggga gttcctgctt     180
gatttccaag aagagccact tagcgtatct acctcgtccc ccnattcacc gaaagcattt      240
tccggaggtc nagatagtgt cgaacatcng agacatacgt ntntccttca anaaataact      300
gcatccccc                                                              310
```

(2) INFORMATION FOR SEQ ID NO:1099

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 700 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...700

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1099

```
agtctgtttt ttagaacctt ccaaatatag acattccaca gctaagtaat gctccgcctt        60
tgatgggaca gtcgtatctg caatacctgt ttgagtctca tagagcatcg agacaaacaa       120
taacctcccc aaaaagaaaa ggggggggcga ccacatgccg gctccccctg cttttccctt       180
atcagggtct tgtttttttag aaatgaacat tgaatgtagc caaggctgca aaaacttcgc       240
ccccgattca tatgtcgcag tagctcctgc cccaagggta ttggagatgc gatatcgtag       300
gccatgcgag caccaaggct aaatttgcca ttggcatacg tgctgccata gcatgcttat       360
tgtctacatc catatataaa taattattgt tttataagaa agacctgcct gaccggctaa       420
aaccaaatca tgacggctgt tttccaaatc agcttgatgg ggctgaaacc ggcaacggcc       480
ataaggagg agaacttcca gaattaagac ttttccaagt ggcatcctca tactgcgcac       540
ttccagataa tggtatggaa gagcagttgc ctccgcatag gagaatccta ttgagactgt       600
tgcggggag tttcattgag ctcttttgct gcagagcgat tcttagtgtc ttcgggaaag       660
gtcaaacctc cggtatatgg acatcggcaa acagaaattt                            700
```


(2) INFORMATION FOR SEQ ID NO:1100

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 962 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...962

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1100

```
ctagaggatc cccggttccg agctttcttc ttttgccgta tcacggacga tgaagaagac        60
gcgaggggcg tcgtatcttg agtcgatgaa ggtgtctgga agttctgctt tcgtctcgat       120
tggaggaacc gctttcaaaa aagttgattt ctcggcaagg atttccgtca cttgccgacg       180
aacccctgta ttgtctcata cgtgcggtag cggatttttc cttcgacata taggagactc       240
ccttttttgat ccacttctcg gcaaaaatgg ccaactcgcg ataggcaacc acatatgcca       300
ttccgttcgc tccggcactt cagtgccatt ggccagcttg tagctcgctc ggaagtagcc       360
agcgaaaagt ttgcgacagc cgaattgcta tcaaataccg aatctcggga tccttgcccg       420
tacggcctat caagatgatt tattcagaga catgagcaat ttctaaccaa gtgaacgaaa       480
caaaaatagg aatatgattc gttcaagcca aatgctgccc tgtctgcaac ttgtgcatac       540
cgatgggacg gccgaacgca gcaagccaat caactgttca cgaagtttcg gcgagaataa       600
tcctgacgca cggccaaacg tacttccctt accggacagg cataccaaac ggacgcacca       660
gctctttctg cgaaggtgat aattgcctac ggtcagttgt ggaataaacg taattccctg       720
accgctctcc accaacgcat gaatgcttcc atgctaccgc cggaatatgc cgtctgacgt       780
tcatcaaccc ttcatctgac aaaaacgaac gagctgatct ctgaagcaat gaccttcgtc       840
caacagccag agacgatgtg ggttgacctc ggtagtgcga atacatcttg gtcgaatagc       900
```

```
ggctcacagc gcgatacata ccccagaaac tctcataata gagcaagtcg tcttcaagac      960
ct                                                                      962
```

(2) INFORMATION FOR SEQ ID NO:1101

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1357 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1357

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1101

```
accatatcaa agccgcaagg tccgaaccca tccggtacac ttcgcgatac cggaagaaga      60
cgaaagatga aagtacggct ttggggagtt tgtccaagtg gctctctata gcccgaacca     120
gcgcagaagc actctgtccg gaaaagaagt accctctcct gctgaagcaa tgtcacggca     180
catcttttcg tcgaattggt aacgacagga ttgcccgttt catctttgag gtatccttct     240
tcaatggtat aggtgccccc aaggctgttc cgagaccaat aacattgacc cgtagcctgc     300
ttcatgggct tgctgtgccg cttcgatggc atttccttca tgatttctcc atccgtcagg     360
acaatgatag tcttaccgat ttccttatta tcgaaaaaga tttggaggca agttcgatag     420
ccgctccgat agccgttcct tggctgtaac catattggga cttatatctg caagaaactg     480
tttggctgca acaaatccgt agtaatcggt atttgcgtat aagcattacc tgcgaataca     540
ccaatccaac cttgtcgttc tgcaagccgt caaagagctt tcccaacatt gcttggcaaa     600
actcaaacga ttgggcttga catcttcaca gagcatgagt tggaaatatc caaacaaatc     660
atagcctcga tacctttctc ctctttggca catccacacg aatacttatt tgcggacggg     720
caagcatccc gatcagaaaa cgatggcaag aagaagaaat ccgttgcgcc agatccgacg     780
tttgtacttg cttccggttt gagagcctta gcagcggaag ttcgggcaaa ccgtctttct     840
tgcgcccgtc ttttgcgata agcatagacg cctaccccca cagcaatggg agcagcagca     900
gtaagtataa gtattcgggt gaataaaatc taacatggga atcttttac gggttggaac      960
gaagaagtgt attgcgaagc aaaactctgt cagcaacaag agaaaagcaa taagggcata    1020
gacaaagtat tttcctcata agccttgaag ctcttggtca taagtctcgt cttctccatt    1080
tgtcgatttc cttgtagatt tcattcagcg tttcattatc gacagcctga agtattttcc    1140
acccgatacc tcggcaattc cgtccaatgt gggttctcta tatcgacagg cacattctga    1200
atccgaactc cgaattccgt ctgaagggga aaggagcttc tcctcgtgtg cctacaccga    1260
ctgtgtacac acgataccga acgttctggc aatatcggct gccattcggg gtgtgatgtc    1320
gccatgttgt ttgatccgtc cgtcagcaga ataacca                             1357
```

(2) INFORMATION FOR SEQ ID NO:1102

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1381 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...1381

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1102

```
gctatcatgg cttcttctgt gtccatcctg atcttcgggt agcgtacccg aatggttgga      60
gcttaatccg aatcagggtc aatccatatg aacagtacgt tggcaattaa ggcctaaaac     120
agcaagaatc gttttcatat aggctttgcc taaggancaa taccaagggg tgcaccgaaa     180
tcaattttcg atgcaccttt ctgcataatg cttaggaagt gaggattata tttctataag     240
aacctccgct aataccgcta taagtagtcg tcccttaaaa gtccttttaa gggagattag     300
ctaaacgcta aacgcaatat acacaggtcg cacggttatt tccgtcagag attacgtaaa     360
gcgactgcag agtaaccccc atacaaatcc ggacggcaaa aggggagagc ctcttggcca     420
ttatgatatg cgtccgacag atggatgtat ttattctgac gaagctgatg acagatcttc     480
aggaggtcgt ggagctgtgc acaagcagat ggatttgtcc ctcgaaatg ccatctttgc     540
cgtaagctgt atgtgcttga tgccgacatt gaaatcttcc gaaataactg tgtcacagcg     600
gtgaggatac cggtggagtc aatgcccttg agtgcgactt agcttcgaac gaggtacgac     660
tgtgcaagct ccattcggta gagaggtgcg gttgccaaag ctgcttttca aacgcatggc     720
aatggggcaa gatcgttgtg tacgaccaca gtattatcgt cgttgataaa tccgaaagca     780
tcgtgcccgg aatcggtttg cagcattcgg caatctgata gttacgggag aatcgtcctc     840
ttgtaggata taagtctttt tggtgttgta agctttctta tctctttctc tgcgggctta     900
ccggatggag aggaggtttt gttgcttttg ccgctttcaa tgccgaacgg atagccctca     960
tcagaaagtt accgctatgt ctccctgaag cagttttttg aagctttcgg gcagagatac    1020
cgtacccgtc cgacggcgta gaagaatgtt tcgcgattga ggaaaccgaa ataggctgga    1080
tcctatccaa aagctcggca gagaccatgg attcggatgt ccgtatacac tgaccactcg    1140
ttcttcccca cgattgatca gctcccgtct tttgcgcgga gaaaagtatc tactttcgat    1200
ttggctcgtg ccgtagtcac atagccaacc actcttcggt cggttgctgg cttttgctcg    1260
aaagtacctc caccgatcac cgctgttgag cacataactg agcggaacga gtttgtgatt    1320
cacttggccc cgatgcaatg gtctcccaaa tcagagtgaa gcgaataagc aagtccaaag    1380
c                                                                     1381
```

(2) INFORMATION FOR SEQ ID NO:1103

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 575 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...575

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1103

```
cccgattttt atcaggacag caaggttact tgccggatgc gaacaaaatt caggtgaaag    60
ctgaaaatta tgaacaggca gtagccatta taaaaactgg caaggtgaag acgtgatgaa   120
ccatgacgat gaagaacagg tcattttgtt gaaggagaaa cgctattgga tacctccgaa   180
aatctttctc ccaaagaaac ggaggtcgtc cgaccataga ggtcttcgat gacaagggaa   240
aggaatcacc aataatttga acccataaat atcagaggtt atggctaata tatgaccaat   300
ctgttcttct gctccacaga gaacaaagag aacctgaaaa cggagaaaac tacatgacgg   360
atactttttt cgggagtatc ttttccgtct ccaatctttc atctgttgtc ttcgatcccg   420
gactgccgat aatgcaatgt acacagtccg tattgaaggc tgacgatgtg caaaaagacc   480
tcggcagaaa tcaggtcgtc cttacacgaa tgttaggtcg accttacggg ccgtttaagc   540
gtccttacag accggttacg tcgaccttac agacc                             575
```

```
gggcgggtgg ctatccgtct cctacaacct cgcggcggat tattcctggt ggaaacggga    60
gccaacgctc atcgccggtt gccccaatac cggcatacgc ccgtctgacc ttgctgccga   120
tcccccgtct gtcgctgcgc atggcagcga atataacgcc acgactctgg agccggggca   180
tgtacatgag gatgtttttt cgactgcgaa gcacgctaca gtttcgataa ggtttgggaa   240
gtatcgtttc gatgcgcaat ctgttcgatc gtcgcatgta tcttatccgt caacgacgga   300
gtacaacgct ttttccaccg ctatccccat tcgcggtcgc gaatgcttgc cacagtcttt   360
ttccgctact gattttcttt attcggtata gcgccgagga tcgtattgag attctttctg   420
aatttcggta cgattttct ttcggcgagt aatttcgtcg acgaaattac tcgctgcagc   480
tatgcaaggc aaatcttggc aacaaaattc atagaatccg acctgcaaac atgaatttcg   540
caacaaaatc gcttcctgca agctgcaaac atgaatttcg gcaacaaatc gcttcctgca   600
agctgcaata agcaattttg ttgccaagca gacctttgca agcttgcagc aaggaatttc   660
gtcgacaaaa ttacacaatg cataccgcgg caaggaattt cggcaacaaa tcatcaaat   720
gcatatttca gccaaaattt cgatagagaa atttcaaata catgctttcg gcaatcaatc   780
tttgacataa aatttccatt gccgaacggc gataagaaac tttgccaccg aagtgatatg   840
tattcccctt aatctttatt ccaatatata tgattggcag gaaatagttt catccactaa   900
attacaataa tcgtatgact gctttcggat aagcttaaga caagaaatat ataattctat   960
cggttttcta tccacaacaa attatttact acttttatcg aagcaaacga                1010
```

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
(A) NAME/KEY: misc_feature
(B) LOCATION 1...741

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1105

```
ctgtgagaag aaactgctgc gcagggtgga cctattcgat gtgtacgaga aagaacttgc      60
ctgccggaaa gaagagttat gcagtgagct tcttcctggc aatgatgaga agacgcttaa     120
cgacaaacag atagaggcta tcatggcaag atacgggacg actctggagc aaaagctcgg     180
tgcgcaactc cgctgaaatc aaacgaaaat cgacaaaata agaatcgaca tatcattatg     240
ggacggcatt tgaatatcgt aaagcaagga aaatgaaacg ctggggcaat atggccgcgt     300
cttcaccaag ttaggaaagg aaatcaccat cgctgccaaa gaagcggccc cgacgtggag     360
accaatccgc gtctgcgtat cctcgtgcag acgccaagaa ggagaacatg ccgaaggaga     420
acgtggaacg cgccatcaaa aagctacctc caaagactat acggactaca aagagatgaa     480
ctatgagggc atggtcctta cggcatcgcg atcttcgtgg agacagctac ggacaataca     540
cacgtaccgt ggccaatgta cgcagctact tcaacaaaca tggcggatgc tcggtacttc     600
cggcagcttg gaattcctct tccagcacaa atgcgtattc acatcgtcaa gaaagacgat     660
atggatctcg aaagccttga actcgactga tagactacgg tgtggacgaa ctggaagagg     720
ggatcctcna gagtcaggtg c                                             741
```

(2) INFORMATION FOR SEQ ID NO:1106

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 540 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
(A) NAME/KEY: misc_feature
(B) LOCATION 1...540

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1106

```
caggagacca gcgtaggcct acggtgctca ttacaacatg ctaattatcg tgcattatgg      60
ccaattaaag taaaacgaga acgaccttag aaattttcct gttttgcgtc ttcaaaattc     120
gtttcccccc ttgtttggga agttcagctc aatagcagat cgacgacctc gactcccctt     180
gtcgtatttg aagcatattt cttataatag aaagaagaca cgtgaagatg gtgatgatgt     240
cattttcagt acacatcgct tttctttatc tttgtagagc atggtttcga atttggaccg     300
gcttttgaaa tcagatactt ctaagaaacg tttcaaagaa ctagttattc gaatcgatta     360
cccctgtgca atggtggctg atagcaggta tctgctcttt gtttttgaga tttttacccc     420
gggtttcttc ttggcttgat cgtatgggag cttttgctgc cattataccg gcggccttgg     480
```

ggttgtctat gtgtggcana ccggtttttt atcgtggctt cgctgctctc gctcttcctc
540

(2) INFORMATION FOR SEQ ID NO:1107

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 896 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...896

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1107

gattaagaac caagatgaaa aaagtatttc aagatcttcc tttggggtgt gttggccgtt   60
gcagtgatcg gcactttat gttcctctgg caaaagtcaa agccaaaccc aaagagtacc   120
aaatcgaaac ggtaaccaag caagacagat cgagagcaag acggtgatca ccggtacggt   180
agagccgcgc gacgaatgct catcaaacca cagatgaacg gcatcgtagc cgaactgctg   240
cacgagccgg agacgtggta cagagcggag acgtgatcgc ccgcctcact gtcgtccgga   300
aatgatccag cttagtcagg ccgagagccg tgtccgtatg gcgagatttc atacgagcaa   360
ggcaaagaat cgtatgcccg cagcaaagat ctttcgacaa atcggtcatc gctctcgaag   420
agttcgaggc agccgaggca atttcgccaa aatcaaagag gaactgtcca atgcgcgtga   480
agccatggag tcgtaaagaa aggtgccagc agccgtacag ccaaacagag caatacgctg   540
tgcgcagcac ggtaacaggt aagatcctga atgtcccggt caaagtggta attcggtcat   600
tcaggccaat acgttcaacg agggaacgac catcgctcga tagcggatat gaacgatttg   660
attttgtcg gcaagataga cgagacgaag tcggtcgcat tcgactgggc tctcccatgc   720
gcatttcggt gggagattgg ggaaagaaag ttttcctgcc acagtagaat accttgcgcc   780
caaggaagta tcagtaaacg gagctgtact gttcgaagtg aaagcttcgg tactattcca   840
agcgacagag taatccgtgc cggctatagt gccaatgctg aaatcgtact cgaagg   896

(2) INFORMATION FOR SEQ ID NO:1108

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 429 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:

```
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...429

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1108

tccacattca gatccgccac tcccttcaca tcgtgaacgg aagtcttgac tgattcccga      60
ttgcaaacag ccggttcaga tccggaccga atagtttgtg gcgatattgg cgcgcgtacc     120
cgagagcatg gcatcgatgc ggtgcgaatg ggctggccta tttcgatatt cacacccggc     180
agcactttga gcttctgcga atgtcagcaa ggacttcgtc tttggaacga tccttgagga     240
cgaaggcacc tctatttccg acacattgac tcccagtgcg tgctcgtcca gttcgcgcgt     300
cccgtcttac gccccacggt ctgtacttcg gggactgaaa gcagatttct tctgccatac     360
gccccattct gtcgctttcc tccagcgata tgccggtaga agtgcttacg ttgatggtga     420
acgacccctt                                                            429


(2) INFORMATION FOR SEQ ID NO:1109

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 507 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...507

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1109

gagaaaatta caagagcaag tcctgatatc caaaagacga agggtttgaa cgatcatcat      60
atttatctgc aaggaacatt accgcaagga aaccaaataa acgaaataag gtaacatgat     120
tatctatttt ttctatttgg atgaggcgat tcgatagcgg aattaccgat attaagcagg     180
gtaaaatcgc tgtccgcgga agttcgtaca cattacgacc gtcgatgacc aaagatgcag     240
ccatctttga gagagagctg accaatcagg cattctgaat tccttccatt ccgtacatgg     300
aacagagcct ctgctncccg gactggatcg nacatatccg tggatattcc aatttggcgc     360
ccaatctttt ttgtgcctct ttcatcgnca cagatcggac acccgaactc tgcaaccaac     420
ttccaacagt ttctcgatga gaccagagaa ggagcttcac gcatatcatc ggtaccgggt     480
ttgaatgaca cccccatatc gctacac                                        507


(2) INFORMATION FOR SEQ ID NO:1110

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 2681 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN
```

(vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...2681

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1110

```
gccaaaggat gggccggcgg tattctcttc aatgagcaag cgaaagccag ctggatcgtt    60
tcttcgcacg acccgatacg ctcagcctcg gtatctgcac ggctgccagc tgatggccga   120
gttggaactt ctatacccg aacacgactc aagcacaagc ttgtccacaa cgaatcgcag    180
aaattcgaaa gcacatcgtc actctcgaaa tcccgcataa cgactccatc atgctcggca   240
atctgccgga agcaagatcg gtgtatggtg tgctcatggc gagggtcggt tcagctcccg   300
tacgaggaga aagcctacca tgtggtggcc aagtacgaat acgcggctat cctgccaatc   360
ccaacggatc gccacaccgc atagccggat tggcagcgcg gatggccgcc atctgacgat   420
gatgccacat ccggagcgga gatattcccc tggcagtgcg gttattatcc cgaatcacaa   480
cgacacgaac tcaggtgaca ccttggatgc aggctttccg caacgcttac gagtggatac   540
caagcaggtg aaaaatggat gatcgtcgcc cccaactgac agaggagcac tgcttttccg   600
catcgcactc acgcatgtaa aaggcgtggg tagcgtgtgg caaggcagct gctttcggct   660
atgggcagtc ccgaagccat cttttcgaca ggaaggagct ggtacagagg ctaccgaaag   720
cacctcgccg cctgccgatg ccatcttctc tccttcggtc atggaggaag cacgccgaaa   780
gttgatcaag ccctcaaagc cggtctgaat atgtatttca tcaccgatga taatatcctt   840
accgcttgaa agaatgtgtc gacgccccca tccttcttta ttcaaaggca atgtcgatct   900
ctcgccacgt agggtgctga gcattgtagg tcgcgcaata tcacggccta cggacgtaca   960
gccacggagc gaatcgtatc ggattggctg aaaccatccc cgatttgctt atcgtcagcg  1020
gactggcgtc ggcgtcgatg tcgcagctca taaggccgct ttggacaatg gcttgcccct  1080
gtagctgtat tggcccatgg attggacagg atttatccga gcggtcacgt tccattgcta  1140
tggagatgct ccgaaacgga ggcttgctca cggattccct atggggactg aaccggagcg  1200
attcaatttc gtcggtcgca atcgctcgta gcaggcttgt cggacgccac acttgtgatc  1260
gaatcggccg aaaaggaggc tccctcatca ctgccggact ggcattcggc tacaatcgcg  1320
aagactggct ctacccggac gagccacgga tagccgttcg gccggctgca atccttgata  1380
agggatcaaa aagccgcgct tgtcagctcg gctcaagatg tctgacgctg ctcgattgga  1440
gttctaccat agacgccaaa cctcagacat gaatttccgt cccgatagtt ggccggatac  1500
ccccgtagcc gaatgtcttt cagagcaggc acagcctcgg tggacgagct gacacgcgct  1560
accggactcc tataaacgat gtttctgctc agcttttcga cctcgaattg gacggacggt  1620
acagtctcag cccggtggca tatactccgt tatataaatt gtacgagaag atgtctccca  1680
ccttgtccat actcataccc gtttataaaa gggatgtcgc agactgctgg aggaactgta  1740
taagcaggcc gaagaactat ccgtggctac gaaatcattc ttggagacga ctgttccggc  1800
gaaccttaca cttcaatat atcgcttacg aacaggaggg actgtgccga cttgtcagtg  1860
ccaagagaac atgggagccg gccgtctgcg caatcgctta gcagaagaag ccaaggcgag  1920
cagctcctta tcctcgactc cgatacccctg ccggcatcac cgacttcatc gaacgctatc  1980
tgcgacatgc ctccggcaca acagtcgtag tggagggttc gtctacccgc ccaaatcgac  2040
caatcccctc cggcaacgta tggcgccgaa gtggaaagtc gatcggcgga agagcgagca  2100
cgaaaaccca ctccggattc atctcaatgg ctttcatgat cccaagaaaa cagatgttgc  2160
caccggcttc cctcccaata tgggtatggg gtatgaagac atcctttcgg cgagcgtctg  2220
cgacaagccg gcatccccat cctacatatc gataccctgt agaacattac cactgcgata  2280
ctgccgaggg atttttggcc actcgcgtag ctatctggac aatctctatt gtcaccgcga  2340
agaattagcc gattggtaag cctgctcaga gcatacaatt tgctgaaacg gctacacctt  2400
agcgaatggt agctgctttg tggccactga tccgatcctc attggaaaag agctcacggg  2460
agctaagccc tctctcctcc tcttcagcct gtataagctc tatacgtagc ctccctctct  2520
ttggtgtgtg ctgaaaaaag ctgatcctag aaagatcaga aaaagcaata attatatcga  2580
aatgtttgac ctcctctcga gtgtcaactt tttttcagta cacgtcagtt cgtaaaaatg  2640
gcggttagcg tttggaaaaa cgtggctcgg gaattttttc g                      2681
```

(2) INFORMATION FOR SEQ ID NO:1111

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 601 base pairs
            (B) TYPE: nucleic acid

```
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...601

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1111

gtcgtatccg aacaattggt cggagccggt ttcaatgaga tactcaacat tcgcttacgg      60
ccggttctta ttacgaaggt cttaagagcc atccgagaag atggcagtgg agctgatgaa     120
tccgctgagt caggagctta actgcatagg cagactctgc tattcggagg attggagacg     180
ctcagccaca acctcctcgt aagcatctct ccctctatct ctttgaatgg ggtaaatgct     240
atcgctccat gccgcaaagc gcacggacga gactccccctt gcggcctatg cagagacgat    300
cgcctcggca tttggatatg cggacaacgg gtgcacaata gctggcacac cccgaagaac     360
cgacttcggt atttgaactg aaagctgtgg taaacaggta ctttgccgcg tagggatcga     420
aaccggagct tatacgctga aacagctgac aatgatctgt acgcatctgc catggaggtc     480
aagactcgtt gggcaaactg ttgggtacat tcggaacggt atcaacggaa ctgatcaaag     540
cttcgaaatn gagcaacccg ttactttgcc gaatgctttg ggatgcccca tgagcgaatc     600
g                                                                     601


(2) INFORMATION FOR SEQ ID NO:1112

          (i) SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 848 base pairs
              (B) TYPE: nucleic acid
              (C) STRANDEDNESS: double
              (D) TOPOLOGY: circular

         (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

         (iv) ANTI-SENSE: UNKNOWN

         (vi) ORIGINAL SOURCE:
              (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

         (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION 1...848

         (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1112

ggccgaagcc cagtacaata tggctcgcaa cggtgccgaa cgcgaagaca gctggcagct      60
tctgccctcg tcgatagagc gagaggagcc gtcgccgagt ggagtcgtac atcaacgaaa     120
cctacctcat cgccccacgg gcaggcgagt gtcggagata ttccccaaag ccggcgaact     180
cgtaggtacc ggcgcactat catgaatatc gccgagatgg gcgatatgt ggccagcttt      240
gccgtcgtga ggatttcctc agcagcatga ccatgggagc cgttctggag actgggtgcc     300
ggctctgaat gaagaaaaag tacgcttcaa gatcacattc atcagaacat gggtacctat     360
gctgcctgga aagcgaccaa gacaacaggg catacgacct gaagaccttc gaggtaaagg     420
ccacccttgc ggataaagac aggcacaaaa gctacgcccg ggtatgtccg tgatcatacg     480
```

```
caagtaacga gagcagtaag gccatgcacg ggacagccct tatagccacc atgcgtagaa    540
ggtgcgacaa ctgacgagtc gcgtcctctt cctcttctgc atggtgatgc tcctgtcttt    600
tgctgtctct tcttcccctc catcatggat atggggtgcc gcagaacctg cctgcgggta    660
ttgtggatct cgatcgtaca cagacgcgcg caccatagca cgccacctca attcgatgga    720
gcaaacccaa atcgtaaaca gttcgaaggc tgcgtgaggc tcgcttgcag tacagcgagg    780
cgagtatcgt actactatat acccgaggaa tgacacggat gcctacgcac agagcagcca    840
agctctct                                                             848
```

(2) INFORMATION FOR SEQ ID NO:1113

    (i) SEQUENCE CHARACTERISTICS:
      (A) LENGTH: 303 base pairs
      (B) TYPE: nucleic acid
      (C) STRANDEDNESS: double
      (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
      (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
      (A) NAME/KEY: misc_feature
      (B) LOCATION 1...303

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1113

```
aaaagaaaca aaaagatatg tcccatttgc caatccatag aagttcgcac tcaccgattt    60
tggagtctat ctgaagacaa ttgtatctaa aacatctgat cttcagacag atatgccttt    120
tctcataccg acgactatta tttcttcgct tcatagaggg ggggcaatgt cgtctgaata    180
ttgatttcaa ggaatgactt ttcgaaaagg atagtctggt tatcattcgt ccgggacagg    240
tacatgcatc attgatgctt acaatctttc ggcaaacttc cttattattg actctattgg    300
taa                                                                  303
```

(2) INFORMATION FOR SEQ ID NO:1114

    (i) SEQUENCE CHARACTERISTICS:
      (A) LENGTH: 507 base pairs
      (B) TYPE: nucleic acid
      (C) STRANDEDNESS: double
      (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
      (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
      (A) NAME/KEY: misc_feature
      (B) LOCATION 1...507

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1114

```
gcaatttgga caaatcacgc atgaaaaacc gttaacagcc attatttcat cagttacgag        60
tgcaagagca aaaattgaca attttcacct gaaaatgttg tctgaagagt gtttcaaaaa       120
attacaaaaa tgtttttcag acgagaccga acagccgaat acgtgaagca ggggattatt       180
tgattacctt tgaacacaga aacttagctt tgacaatata tgattacagc cgaacgttat       240
cacgaattag catgggacac cgcgtagtgg ggcacgatca caagtgcaga catcgcatgg       300
acacaactat cgtatccact ttatttgcag tgcaccggct cttattcgat cgggcgtgta       360
gtcgatttcg gtgttatcaa agagttgcta tgcagtggct tgaagatcat tgggatcaca       420
agatgatgct atgggagcag gtccgttgct tcctgctttg cgtgcgactg tgccggacga       480
tctggttgca taccgttcaa tcccacc                                           507


(2) INFORMATION FOR SEQ ID NO:1115

        (i) SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 1866 base pairs
              (B) TYPE: nucleic acid
              (C) STRANDEDNESS: double
              (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
              (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION 1...1866

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1115

ggcggcgaag tagtccgaag ccgaggggat accgctcgct cctccgtaaa aatctccgaa        60
ggcaggtcgg ctccgcttcg ggtcatttcg tcgaggaatc atcgatgagc gagaaggcgt       120
ccggctcctt ttcggccgag gcgggttcag ctgctccgga tgcgtatatt gctccacgag       180
caggtacagc ttgcgctgtc cggcagatag ggtgccagcc ggcgcagctc cgaagcatag       240
cgcactcctg caccacatac atattatata ggtataggaa gacgaaggtg gagcgtaggg       300
ataggcctcg tacagggctt tcatctcggg cagcgtgtca gccaaagccg cgaggggtgc       360
tccatgtagg cgtacagatc gttagtcgtc atgtgggggga ggattaccag ttctctaccg      420
tagcgttata cacctgcttc acaagtcgtc gaccatattg gccagcaggg cgtcttgtac       480
gtccaccagc gctcgctgct gtcgaagtcc gtggaagacg taaagtcccg atcgaagttt       540
gttcgggagg ccttgttctc gtagtgcacc tgtatggata aggttacctg gtgcgtgcgg       600
ccagatcgtt gtcctgtacg gcgaggggag cgaagtctaa ttagtgatga ccacctcgat       660
gatcatgtcg gcatcgttgg ttcgtgcatt tcgagcttgg tacggcgcgt aaaatggttt       720
tggagggctt cggtctagtc tgcgccaacg ggggatatac gcgggtggcc tgattggtca       780
catcggcata taaagcgttt tgatgcggct atagtccaga gcacctccgt tgagctgtag       840
gagatgctgc atgccgagca ggtcagcagg acgataagca ccccgcaaga gcggaaaggc       900
tgtatcgccc gagggttcta ttccagtcca tctccttgat tttacggtat agtgtccgct       960
ccgaaatctt cagttcctcg ctgtctgctt gcgccttccg ccgtggcgtt ccaatgcaag      1020
ggaaatcatt tcttctctac ctcctccagc gaaaccggat cctcggtgta ttcgctggtt      1080
cctgtatcgg ctccacgggt tctgccgcgt tcgcgatggg ggccttggcg tgctgacgcc      1140
ccacttcgga tctgcggtgc gcttgtcgtc gttgcccaga cgtccgaccc tacaggccat      1200
gagggctgtt cgtggtgcgc caggcgttca tcatccccctt caaatcggct atctctttct      1260
tcatatcgta tagccctggt agatgatttc gcgctcgtaa tgggggattt gtttgtccgc      1320
ttcgtcgttt cgttccgtcg gatcacgacg gggtggaggt cttgcatccc ctagcgtcca      1380
ggtagcgagt gatggtctct gccgataccg tccgctcctc cccaggatgc tcagcctgtc      1440
ggttatattg cgcagctctc gcacattgcc ggccagcggt aacgcattaa tatggtacgg      1500
gcttcgtccg ataggcgcac ggaggcatcc gatacttctc ggcgctgtcg gcggcgaatc      1560
ggcgaaaagc aagggcacgt cgtccggtcg catacgcagc gcaggcacct cgatcggacc      1620
```

```
gtattgagcc ggaagaagag gtcttcccgg aacttcccgt tcgctacgcc tccttgaggt      1680
tcacattcgt cgccgctacg atacggacat ccgtctctgc gactggctgg ctcctacggg      1740
gatgaactcg cccgtctcca gcacctcagc agcctcgcct gcgtgggcaa aaggcagttc      1800
gcccacttcg tccgaaagaa tcgtgccgcc ggatggcttc ttcgaagtac cccttgcgat      1860
ccgata                                                                 1866
```

(2) INFORMATION FOR SEQ ID NO:1116

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 556 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...556

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1116

```
atccccggcg atacgctttc gtatatccga ctgtttgcga tcggactcag ggctctatcc      60
tcggtggcgt attcaatacg ttggctacgg atatgactct tctatgagta ttgtacctcg      120
gatcatcgtg atgctgatca ttttgctatc ggtcatggtc tgaacttcgg tcttacgatg      180
atcagttcgc ttgttcccccc attcgtttga cattcgtaga gttctataag aacagcgaat      240
ttgaggaggg ggcaaccagt acacaccgtt caaacgctcc taaatcacaa aagacaattc      300
aaaaaaatca taacaactaa acaacacaaa agtattatgg aacaatgtta gcttatctcg      360
gtattgcatt gatggttgca ttgaccggta tcgaagtgcc attggcgtaa cgatctgcgg      420
taacactacc gttggcgcaa taagaagaac cccgattcac tgggtctcta catcggtctt      480
agtgctcttt cgagttcaca gggactctat gggtttcgtg ggcttcttta tggcattccg      540
cttgatcacc aaattg                                                      556
```

(2) INFORMATION FOR SEQ ID NO:1117

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2307 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...2307
```

```
gggcgtacca ccacgacgca gaggtatctg tgccgcccat tgcttcttcc ttcttcgcta    60
agcacggcag tcatatcggt gatgataaaa cccggtgcat cgcattggca cgcacgccac   120
gtgagcccag ctctttggcg acactctggc caaaccgatc ataccggctt tagaagctga   180
gtagttggat tgtcctcatt gcctgataca cctaccacag aagccatatt gatgatactg   240
ccggtcgctg tcccatcatg atggggagtc acgggcattg gatcatgttg aacgtgactt   300
cagattaacg ttgatcacgg catcccattg ttgctcggtc atagcatcat aaggccatcg   360
cgagtaatac cggcattgnt caccaaaata tcatccgacc gaagtcagcc ttgatctgtt   420
ccaccactgt atgtngctgc acgaaatccg ctgcattgga agcgtatgcc gctgcacgta   480
ctccgagccc ttgagttctt ctacgaaagc ctgtacgccc tcatcgatat tcagatcaga   540
atagccacat cggcaccttc cgttgcatac ttataagcta tggcacggcg ataccgcgtc   600
cggctcccgt aatgagagct accttgttct ccaataattc atactttgat tttaattagt   660
cgtggacaga tacctaccga tacgattgta tgtccgcgaa gtttatttat tgatcgttaa   720
attcttaaac actttacttc caatctcttc ttcaccgctg tttactgccg gagagagaca   780
gatacgtgga agatcagatg ctccacattc tcactgattc gctcgaacgc gatgttccgg   840
catgcctaag atgtccgctg atatacggca cttccagccc ctgattgagt ggagtaagat   900
cttggcggta atatgggtat cgggtataga aacgcattaa gccgaacacc ttcgtccaaa   960
atggaacaga tcagatgttc tccttgaggt cgaactcctt acgagcagtc tccaccttcc  1020
atatatcaca aaaaaatcgg cacgaagcgt accattgcgc acgacaatct ctttgattct  1080
tccaaatgcg tatagatgaa gtgcatcagc ttcttagtcg gcggcatgac acgagagcag  1140
cagtctccaa cgagctgtag agttcgtcca gctcctatgg acaacggcaa aatagatatc  1200
ttttttgctt ttgaagtaag tatatgcgtg cgtcgtccct tgtttgccgc atcggcgatg  1260
tcgttcatcg tggtttctcc acaccgatct tggcaaagag ctgacgtgct acatcgatca  1320
tcagttctct tgttttcgcc acactcatta aaattttcg attgccctat atctatacgg  1380
cattctgttt cggaacaaat ataaggtttt tggcgttgat ttgcacgttt gtttcagtat  1440
tgagcaaaaa agtccaccgt cttagcctgt tattggcttg gacggttcta tccattatcc  1500
aagaaaagtt cgatcgaaaa aataaaaaag ctgtctcctt tgaaagggga cagctcatcg  1560
atcattctgt tgtctcacaa ggattcgaac cttgacaaac aggaccagaa tctgttggct  1620
accattacac catgagacaa tggcgaagcc tttattgctt ccggtgcgca aatgtacacc  1680
tttttgtgaa acaaacaata aaaacacatt tggatttaat tggcatccat atcttcctcc  1740
atagagttcg attttgaaaa gatggttgga aatctcgatt ttaggttcgt aaaccggaaa  1800
cacggtcaag atatttagtc aatttttctg tccgtttttg tactttttgcg agcgtaaaga  1860
ccaaaaaggt catacatcag catcaaaggg ttccatctca ataaacatcg agaagaatat  1920
ccgcaacttc tgcatcattg cacatatcga ccacggcaag gtaccttggc cgatcggttg  1980
ctcgaatata ccaacaccgt ctccggcaag atctgcaaga tccaggtctt ggacaatatg  2040
gacttggaac gagaagaggg tataacgatc aagagccatg ccattcagat ggactatgag  2100
atggatgaga aaagtatgtg ctcaacctga tcgatactcc ggggcacgtg gacttcccta  2160
cgaagtctct cgctccattg ctgcttgcga aggggcattg cttatgtcga tgctgcccaa  2220
gggatacagg cgcagaccat atccaatctc tataggcgat cgaaacgac ctgaccatca  2280
tccctattgt aaacaaagtg gattgcc                                      2307
```

```
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...928

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1118

aggaaaccgg cgaccgcaag cctgtgaact atgtgcttcc tccgggcgtt tgcgttcact    60
cgatccccag caagcacaga gtactcagca aaacgaacgt ccatgagcct gaaagtccgg   120
acactggcac cgggcgatgc acgggcttat ataagaacac gggctacgac ctgagacgtt   180
ataagcgttt gcagatttta cgcatgccga acgccttcag gatgaagacg gcacgcatac   240
agggatggag atctatccgt cttcatccgc ttggggacgg actaccggaa caatattacg   300
aatactccat accgttgcgc ctgactcctt tcggtactta ttcaccaata gcgaaagcga   360
tagagaaacc gtttggccga aagaaaatat gtcgacttca aactgtctgc ccttactgat   420
attaagacga aacgcaacag gagaaagcag caggcaatcc tgctgccgac ttctatcgcc   480
ttttctccga cccgacccceg aaaacacagg taatactgtg agcgttatgg gaaatccgaa   540
ctgagtgaag tcaagactat catgatcggt attcgtaata atagtactac atcaaaagcg   600
ccgagatatg ggtcaatgag ctcagactca cggactagat gagaaaggcg gatgggctgc   660
caataccacc atcaatatgc agcttacgat ttgggatcgg tgaatatgcg cggacagatg   720
ataaccgcag gattcgtgct ttggacgagt ctctcacaca gcgagccata gaagatacgc   780
gtacctcaac ttctccacca atttggagct tggcaagttc ttccccgaaa aagtcagatc   840
agcatacctt tctattactc ggtatcggat gagaaagtat ctcccaatac aatccctttg   900
atcaggacat tctcctgaaa gatgctct                                      928


(2) INFORMATION FOR SEQ ID NO:1119

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 392 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...392

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1119

tctgcgtgcc ctgacgggat tggagcgcga caagctgcgt gcagagttca agagatcatg    60
gcctccatca atcatttgga agctctttg gctgataggc attactgatg gagctggtca   120
aaagcgaact gctggagata aaagagaata tggcgatact cgcaaaagcg agatcatata   180
tgcttcggaa gaattcaccc cgaagacttc tatgccgacg atgatatgat catcaccctt   240
tcgcaatggg ctacatcaag cgtacccctc tgagcgaatt cagaacgcag gctctggcgg   300
agtaagagcc aagggatcgg atactcgcga aagaagattt ccgggannta tatctactcg   360
gcctccatgc acgccaccat tatgctgttc ca                                 392


(2) INFORMATION FOR SEQ ID NO:1120

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1952 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular
```

(ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1952

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1120

```
gggccgtgca tgaagcagcc ggcttcgccc gaacatatcg tccgggctac gcttcggttg      60
tgatcgtagc cgagagggtc atatagccgc cggtcaatac ttgccaagac acagaatatc     120
cggcaccgtg gcagcgtgcc ggagcgcaac agttcgcccg tgcggccgaa tccggtagct     180
atctcatcga atatcacagt acgccggctt cggagcagag tctgcgagct tcgacgagat     240
accgggatag tagaaataca taccgccggc tccctgcacg atgggttcga ggatagggct     300
gccagctccg cccccctttgc cgagaggagg tctcggagcg gcttatgtcc gccggcagcc     360
attcgccacc gaagcgactc ttcggttgtg gcggaaatac tgtacgggca atgctcccga     420
gaaaatgccg tgcataccgg tacgggatcg catacgctca tggcgtgcca ggtatcgccg     480
tggtagcccg acggatcgta gcgaatcggg tacgtctgct ctgtccgcag gcttgctgaa     540
ctgcaaagcc attttcatgg ctacctccac tgccaccgaa ccgctgtcgc atagaagatt     600
ttattcaact cggacggcag gatgctcaga agcagttggc caattctacg gccgggcgat     660
gggtgaaacc gccgaacatg atatggtcat ctcccgaagc tgccgttcta cggcggcatt     720
cagtcgcgga tggtttagcc gtgtatggct gcccaccacg aactcatacc gtcgatcagt     780
tcgcgccgtc ttccagatag atgcgtactc cctcggcccg cttcacggga aatcgggcaa     840
tggatctata gtcgatgtat agggatgcca aaggtggttg cgtccaaacg cagcatttcg     900
tcaatggtca tagcttacct cccagtctgt acgttagtca cttgaaatcc gcattccctc     960
acgagctgca tatcctcagc gctttgcttc ccgtcgtggt gaggagatcg cccgtgatgg    1020
ctgcattgaa cctatatata tagctttgcg ctgaacggca gggcttagtt gtgcccgtct    1080
cccgaaaagc gaagaaaagc tcgaggattg atgagccgga acagtgcaca gtcgtgaggt    1140
attcctcttc gcttagaggc agagtcctct ccagcgagtg ccggggatcg gctgcaggat    1200
attgatcggg atggagtaga cattgtgctg tgcaggtaga aagcaaattc gatccgctgc    1260
tccatcgtct ccccatgccg atgattccgc cactgcatac acgcattccc acacggcgtg    1320
cagtcgaatg gtggcgagct tttcgtcctg cgtgtgcgta ctgcacaggg agggaagaaa    1380
ctcggagccg tctccatatt gcagtggtag gtggtcaccc cttgtcgaat aatatctgca    1440
gtttctcctc cgagagcagc cctaaagagg gcagcatttg atgtccgttc gttgcttgat    1500
ggcacgataa ctttcggcct ctgtcgtatc tcgttcatag acgcagtgcg cccgctggcc    1560
acaagagaaa gcgtccgatg ccttgccgcc tgttgtaagc ggcctgctcg gcacaaacgc    1620
ggccgaaaga agtccgtatt tctctatcga agcggcataa tggcggtttg agcacaccat    1680
ttacagtctt cgggacagtt gccgctcttg gcgttatgat ggagcaggtg tcgaacttat    1740
cgcccatgaa ataccgggtg atccatgtgc agcctcgtag agtgcttcct tatcggcaga    1800
ggaggccagc agagggcttc ctcaagggtt agttcgccac cgtttatcag tctgttttcg    1860
atgtctgaat catatatggg aacggagcag atcctttcct gtctgcatcc ggacaaaagt    1920
agaaagaagc tccggcaata gaaactaatc gg                                   1952
```

(2) INFORMATION FOR SEQ ID NO:1121

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 608 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

```
    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...608

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1121

ccccgacttt ttgcattaag ttactaccga caaagttagc atccagtcta gagcaggacg      60
actctgagca tttgcaaaac cgattgttgc gagcagcaag tagctgccaa aatcattttc     120
ttcatttttc gttctttttt gagttttttc tacaatgtaa cacactctct ctcgttcaaa     180
agtatgccta tacatacttc cgatgcagca aagatacaca atgaaacgta tctatgattc     240
aaatgaagat ttgcacttat caggtggaat ctgcaaaacg cgaaaaacgg acaaatattg     300
gatgatataa aattattaca tacatttgca ccgcatttca aacaaaaaaa tgctactaag     360
gctgaatcgc tagctcagca ggtagagcac atcctttaa ggatggggtc ctgggttcga      420
accccaggcg attcacgaaa aaaaggggcc atgtcaaaat tcggtttttt tgaagtacgc     480
ctcaaaaagt ggatattaaa ttatccttgt gttatagaaa gagtccggta caataccggc     540
tctttttcgt taatcttgcc ttaattctac tatttctata atnggtattc ctccaatgca     600
ttgataaa                                                             608


(2) INFORMATION FOR SEQ ID NO:1122

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 778 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...778

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1122

tcttttcctc ctcctgtaaa gaagatcttt cactatcaat cacatccata acccacatga      60
agtactgtgt gcactaccat ggtgagaaac tttaattaat caaagatgac tggttttgtt     120
tcatctttat atactttttc tatcgcatgc tcacctgctc cgggatctgc atctcccata     180
agcagaatcc gatgtcttga tactcccaaa taaaggcaat agaagcgata ttgttgtcat     240
ccatttcgat aatgggcggg atgcatatcg cttcaatatc tgttcattga tcgttcatca     300
tttacgttct catcttttgt ctcctcgcct tcttctagtt gtgaattctc atcaaagcct     360
catagatagt ttcctcccca tcatagtctt ctttttttgt ttgtacagtt gttgccaaaa     420
tagctttcga tattttacat cagtctatct aacgcaactt gggaaggaga aaggaaaata     480
atcctcccca attgttggca agttgaatcg caggagactc atctgtaata tattctcttg     540
ccaagccctc ctccattctt cttttctcaa tatacattct gccagggtag cgccttttct     600
tcattgacat tttgacttag catatcaatc acaatggcaa ctgatcatat aagcctatcc     660
acattcgctt tcatctgctc ccgtcctggc tgctcattgg taataaccct ttggtagcag      720
ttatatatga atatgttcga ttataanggc tggattttga gttaagcatt ttttatca       778
```

(2) INFORMATION FOR SEQ ID NO:1123

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 740 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

 (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: UNKNOWN

  (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

  (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...740

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1123

```
tgcgcactcg gcaatacgta acggtgtgga tggctacttc ggctatcctt cactccgcag      60
tctgaagtta tggaaacgct catggaggag catccatgga tacgaccggt atggttgtct     120
tgcaggcaga gagcgaagtc gctgccataa catggtttat ggcggtgcca gctgtggcaa     180
aatggtgatg acctctcctc cagcccgggt atgagtctta agcaagaagg agtgagctat     240
tgtgcggtgc cgaattgccc tgcttgattg taaatgttat gcgtgggggt cccgcttggg     300
aaccatccaa cccggacagg ccgactattt ccaatctgtc aaggtggtgg acatggtgac     360
tatcgtctga tcacattggc acccaactcc gtcaagagat ggttgacttc gttggtctgg     420
gactggagct ggcattcaag tccgcaatcc tgcactcatc ctttccgacg gtatcatcgg     480
tcagatgatg aaaaggtgat attgcctccg ttcaaaaagc gtcgtaccga agatgaaatc     540
gcaaacaatg cccgtgggca actctcggtc gaaaaggagg tcgtcagcga atatcattac     600
ctctctcgag cttgattcgg ccgttatgga gcagaacacc tccggcttcc aaaagaagta     660
tgcagagatc gaagccaatg aagttcctta ccgaagagta tcagacggaa gatgccgact     720
atatcctcgt tgcattcgga                                                  740
```

(2) INFORMATION FOR SEQ ID NO:1124

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 559 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

 (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: UNKNOWN

  (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

  (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...559

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1124

```
gatcgtgtac acagtctcgc tatgttggtg ttcgatgagc aatacaggaa aaaagtngcc          60
gaacattttt cttcctccnt anggagcggt acttctacta tgtctttact gtgaaattaa         120
aacccggaca gcgcgatttc tttttcgggc aaattttcct ggtatgcaga ctgccatggc         180
ttcgatcgtg aacaaaccga tatgaatcac tttatgcagg tcctcagata tttggaccct         240
attcatatct caaagcaacc aatgataatg gattccccat gtcgagaatg tattcaatca         300
gacggttacg atcgggggaa ccatcactca gcctttacca ttcagccgga cggagaaaac         360
aatgtgaagt tgcagcgtgt ggttgcaaag ttgatgtgaa tatcgtggaa ggagtggaaa         420
atctgcagaa gattgaactt ttaatgctaa tgtccactat agattggtgc ccaaatcagt         480
cagagcctat caagttttac ggncccggta gaactaaggc gagtaggtac cacgaaccat         540
ggctttggct attatgccg                                                      559
```

(2) INFORMATION FOR SEQ ID NO:1125

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 313 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...313

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1125

```
atgatggcta ccggcgacga agctctctat gctcgactgg aggcctatag gagtcgctca          60
aagaaaaagt cgttaaggcc aatcgcgagc tggcagagtg aagtacaact tcaaaacgaa         120
ttaaagccct gtcctgcccc gttggtctcg gcacaaaaaa gatcggcagt ctatagccgt         180
ggcttattta tgagccctat cggctgtagt ctgcctttct ttttctctat tatcttttcg         240
aagtatgtga agtcgttccc gcttcgaatc ggcaatccaa agaatatagc aaggctatgc         300
tcgatctgtc gga                                                            313
```

(2) INFORMATION FOR SEQ ID NO:1126

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 632 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature

(B) LOCATION 1...632

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1126

tcgaacagct gaagcattgt ccgtacgtct tcgttttggc attcgtccta tcacgttctt   60
tgaagagttg ctctgctgcg gcaaactctt cgggcgagtg gaacccactt cttttttcat   120
acgctccttg gcctcttcaa gtgtcagtga ccttcgcgat gagcctcttt gatgtcgagc   180
atacgctcca acttactttg tcgaggctgt caaaagtttc atttgttttt atgacctgca   240
tgtttttgag caattagtga tgaataacaa cctcctcgca gcttatcaaa agctattgtg   300
gaggtatatc cactttcgta aaataacaa tctcagaata tattttgttc tggtttttca   360
tcgaggaaaa aagtgcatat gctcattacg cccaagcagg atacgagcct gaaatgctcc   420
gattgtggtc tgtgttttgt gaaagcaggc gcgagatttt tttcgttttg gtttcacttt   480
ttttcttttc cacgccaaaa gcaaaaagtt cacgtgccac acttttgggt gtcataaacc   540
gaaaatttag gcgtgtgaac ccaatcggat agggatgata catcctatgc tgaatcggaa   600
gtgaatatgg tgcaaaaaaa gagggacagt gc   632

(2) INFORMATION FOR SEQ ID NO:1127

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 2267 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...2267

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1127

gcgttctact ttggctttga atataggcaa gcgagtcaac attggtaaca tgtggattat   60
atctacagca acggtttcta caactccaac aagacgaagc catctcctac cgtttcttcg   120
gcagctaccg ttccgaccgt tacgaagcta tgcttatgtg ggcaacaatt actatctgat   180
gacggagaat gggggggttac gaatgatgac tacgtgatcc atccgggtaa ttttgccaat   240
ggaacaacga attcgtatcg acggatattc cggtgaagtt tcccggcaat aatagttcaa   300
ttcgcttcgg caaggaacgg ctcgtctgac ccatcgctac aactcggttt ctatcgtgag   360
ggacagaccg agtattatga tggcaatgaa ttgaggctcc tcatttgatc gatacgatgg   420
tattcgtgcc cgtgggtagt attcccacac tttcaattat accaaaagtc gccgtcgctt   480
caaggtcaag atcctttgga caattcgatt tatcccaatc tgtttatcaa acgactgaag   540
atgccggaga gatgatcacg ctgccgaacg acaccactcg tatggaaggt accacaatac   600
gctggctctt tctttgcggg aaggtttcca tcgctggcta agttcggcct gacggcttat   660
gtcaggttgg agaataggtt ttatacctac aagattcagt agtcggtgta ccccctacgg   720
acagggagtt cagcattatg tcggggggaga gatcagccga cgagggggga aatatctcaa   780
ctttcagccg atggagagct ttcggtcgtc gggagcgatg ccggagcatt caactcagag   840
gacgattaag tacagcgttc gatctccttc gtcggaagac ggaatggaag cttgggggca   900
acttctcaat actcgtccgg gctactttct ggtcatcatc atggtactgt gcactggtgg   960
gacgaatcgt tcgatttcat cagcaactca gatgggtggc tctcttcgtc tgaaggactg   1020
gggtacgact tgacgttgca atccgctacg ctcaagaact atatatattt cgaccatagg   1080
ctttccccca acaggtctct tctcccatac aagtcctcga agggcggtag cacatgccta   1140
ccgatggggt gctttgggat gggaagtgga agcggctatc aaacaagtag caaccgtacg   1200
gctttgcctt taccgaagct ggcggttatg gcaatctcta tttggacttc cgtctgccga   1260
gcagtaccaa ggtgtgcgta tacagacggg agtggatgct cgcattcatt cctcctacta   1320

```
tgcccgtatt ntgaacccgc cgtacagcaa ttcaccacgc aacaagagat aaggtgggag      1380
ggtctttccc tctgatgaat gcttatgtga atatccacct cagcgctcac gtttcttctt      1440
tgaaatgtac aatctggctg aggctttcat gatagcaagc gtttctcttt ggtgcatacg      1500
ccgtacaacc ctcgtggtcg cgtatgggta ttgccatcga cttcaataaa taaatggaaa      1560
tgaagaaaag attgctctct acggcgtttt actgatctct gtccttatcg tgatggtgct      1620
ttgcgccact gtggtggagg aggggctgcc ggtggggacg ctgtcgttcg ttgcgtgatt      1680
atcctgatat tcaccgagaa ggagtgctga ggatcttgcc cgatacaatg acagagacta      1740
ttatgtggga caggattcca ccgcggtttt gtttacgatg tagcacgtcg tttatcggaa      1800
atcagtggca ttcgatagaa atcggtctgg aaaagaattg gaaagagagc cttgaaaggt      1860
tggacggggt gcatgcgaca tcattgcaca ggacattccg ctgacggctg tacggacacc      1920
gtccactacc gctttcttcg tccgatacac cttggacggc ttatctggta caacgtcgat      1980
ccgatactgc tctgattcgt cgccagatca tttgtccgga cggacggtga ccattccgga      2040
aggctctccg gcgaggtttt cgtcaaacac ctgtccgagg aaatcgggga tagtatatat      2100
atacgaacga tcccacttat tctgcagagc agttggccat gatggtggca tcggacacat      2160
cgatctgacc gtctgtaacc aacatgaagc taagaagctg gggcactcct ccctgcgttg      2220
gactgcagtg taccgctctc ttttcgaact gcgaaggcat ggttggt                    2267
```

(2) INFORMATION FOR SEQ ID NO:1128

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1794 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1794

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1128

```
cccctgggag agcgatgaga aagaaaagct ctcggatgaa gaaaaacgct tctgtataat        60
tgctatcggg gctttgtcga tagcggagca ctactcccac agagaaaaaa gaccggctgc       120
gtaccctgtc cgaagagatg agtatggctc attgacattc ggacagaatg tgctcaagga       180
cgagaaacgc tacaaatcca cctcagcgat ccggcggctg tggccgggat gcccgagacg       240
gctctgctct cgcttcggag aaagcccggc gaaagggcta tacggagggt tggctttcga       300
cctttctgct ccgagctact ttgcttttat gaagcattgt cccatgggaa cctgcgccgg       360
cagatgtatg aagcgaaaat gtgtgtcggc ttgtagacaa tgagtataac aacgaagctc       420
tgatccgtag aatggtaaac gccgtctcga ggaggcacaa ctcctgggtt acgataacctt       480
cgcccacttt ctcttcatga caggatggcc aagaaccca aggcagtcca agaactactg        540
acaaactact ggatgcatac aagcccaaag cgacagatga attggagaga tccgcaaatg       600
ggcttgccga caagacatcc gaagtcgata acttcacata caaccatggg attgggcata       660
cttctcggaa cagtacaaac aggcccctac gatctggacg atgagatgat gcgcccgtac       720
ttcgaattag ggcgatcaca cgtggtatct tcggcttggc caaccgactg tacggacttc       780
attttccgaa cggacggatg tgccggtcta tcatccggat gtaaaggtgt acgagtatcg       840
gacgaagacg gctcttatat cggtctgctc tacacggatt tcttccacgc gaaggcaagc       900
aaacggagca tggatgaaca acctccggga cagtccgaac atcagcaccc gcacatcatc       960
atcgtgatga acttcacccc ccttcggcgg acaaaccctc gctcctgaca gcaggtgagg      1020
tggagacttc ctgcacgagt tcggccatgc cctgcatggc atgctgtcca aatgccgctc      1080
agctccttgt ccggcacctc ggtagcccgt gacttcgtgg aacttccagc caaataatgg      1140
aaaactggct gacagagaaa gattttctcg acaccttgcc cgccattata taacggacga      1200
acctatgcct accgaattgg tggaaaactc ctctcggcac gdaattacct cgcagcaagc      1260
```

```
ggtgcatgcc gtcactcagc ttcggctatc tcgacatggc atggcatgga ttgtctgctc    1320
cggggatgac aaattagaca tcaaggcttt tgaagaggct gcttggtcaa aactcttatt    1380
ctacctcctt cgcccccgaa tgccgtgatg agcacggcct tggtcatata ttctcgggag    1440
gctatgcagc cggatactat ggttacaaat ggcggaagtg ctggatgccg atgctttcgc    1500
agctttcaag gaagtgggtt tttcgatcgc gaggtagccg gtcgtttccg ccgtgagata    1560
ttggagaggg cgatacggcc gatgccatgg agctgtatgt agctttccgt ggacatggcc    1620
ggacattgct cccctgctga agcgtaccgg cttggtttag cctcattatg cggtctcaat    1680
accacgtaaa acgtaagccc gaaagcgaca cgtcgtttng ggcttacctg gttttantcc    1740
tggttttgga aacctgtgtc ttgaatacan gggatatgat ttactggcga atgc          1794
```

(2) INFORMATION FOR SEQ ID NO:1129

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 1366 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1366

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1129

```
ccgggccgat gctttcagct cgtcttccga ttcggaacga gtagcgcgct ggtgctggcg      60
atccctccgc cgcgctccat gatactcatg tagctgtccc ggcgagccgc cattggaact     120
catcttccct gtagccgccg aagacgaatg ggtgtggctg tccacaaagc ccggcagtac     180
gcagcgtccc gtggcgccag ctcccggcag ccttcggtca tggacggggc tacgtccgcc     240
atgcgccggc gaaggcgatg atgccgtcgc ggataactac tgcggcaggg ccttgatggt     300
gtgtatctgc cccatggctt cgcggccgtg tttggcttcg gagcttggca ggtgacgaag     360
ctgggcgata ttcttgatgt agaggttcat tggtgggggg tgttaggcat gtgtgtcggt     420
aaggaagctt gccgatagaa cccaccacgc cacccggaag agggtggcgg gtggtatctc     480
tatccttcaa caaaaaacat gctgacgttt actccatgat ccgtgattcg aggatctgac     540
catggagaag ttttcgatgc cgaggtagta ttcggcacag tcgatcaggc ctgcatgggt     600
acgagtccga tcacttcgct gcctacgacg gatacgcgta tcgggcggct tccatgcgta     660
ccatctcatg agcgcgatag acagcctctt ggtgaagtcc gtcaggttca tggacacctg     720
cacgatgccg cggtcgtaag ctctacgccc atggccttgc agaagcgcag accgccgccg     780
aggagcgtac cttcttggcg atggcgtccg cgatggagag gtcgttcgta ttgggttcac     840
gttgtaagcg acgagcggca tgcgggcgcc gactgccacg gtccggctgt cgggtgacga     900
tcggccgggc cgaagtcggg atgccagtcg gttcgtgtat cttctctgcc atgccttcga     960
actcgccttt gcggatcttg ccaggttttc acggtgggga gcggtagccg atttctcata    1020
gaggaatacg gcacgccgta cttctcgcct atcgtgcggc ctacctcctt ggcgaggggt    1080
cggcgtcttc ggcagtcaca ttcttgatgg ggataaaggg gatcacgcca ctgcgcccat    1140
acggggggtgc tgacccgtgt gtttggtcag tcgatagct ctacggctat gccaacggct    1200
tcgagcactg cctcccgaag gggctgggtt cgcccactac ggtcacgacg agacggttgt    1260
gatcctcatc gttgtatagt tcagcagctt gacgccttcg cgcgtgcgga aggggtttac    1320
tatttttcga ttttctcttt gtcgcggcct tccgagaagt tgggca                   1366
```

(2) INFORMATION FOR SEQ ID NO:1130

      (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1433 base pairs
                    (B) TYPE: nucleic acid
                    (C) STRANDEDNESS: double
                    (D) TOPOLOGY: circular

          (ii) MOLECULE TYPE: DNA (genomic)

         (iii) HYPOTHETICAL: NO

          (iv) ANTI-SENSE: UNKNOWN

          (vi) ORIGINAL SOURCE:
                    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

          (ix) FEATURE:
                    (A) NAME/KEY: misc_feature
                    (B) LOCATION 1...1433

          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1130

```
ggaacagccc aaactgaatc cacatatacc ggatatgcag cgtgtcttgc tgaggtgata      60
caggtggagg tgtcggatat ttcactgaaa gccacaacac ggagaaactt ggcttcacag     120
gacgagagga aggcatttcc gcctatgcgt ggccttgctc attgctgccg tctgagacta     180
accaagtcct aaaagatagt tgcaaagagg ttcctttctc tcaaggattt ggctcttatt     240
ccttaacagc tctttttccc cctttttcgg gggtattatt ttttcaggag gggagtagcg     300
gcttgaccag ttgccagatg acgattcccg ctgtgacact tacttgagcg aatgcttcgt     360
gccgaactgg ggtatctcta agcagaggtc acgaggtcga tggcttcctg tcgtactcct     420
tttacttcat tgccaaagat agggcgtagc gtgtgccttt tgaggggggag aaattttcca     480
aggataggct ccttccgcct gttctatcgc acagatacta tatcctttgc tttcaattct     540
ctattgcatc cactaccgaa gagaaatact cccatttcac actgtcctgg ctcctaaagc     600
tgtcttgtgt atgtcgggat gaggtggccg agctgtgttc cgcacaagca tagcccttct     660
aaccgaaaag catcggccgt tctaaaactg acccgacatt gttcatacta cgtatatcat     720
ccagtatgat cctgaaggta gcttggggct ttcgtgatat tcttctgttt tgagtcgctg     780
tattcgatag tctttttttt gcgcatgtct gttgtctggt cggattgagt gatggtgcac     840
attccattat caaatgcaac gaatttctaa atataggatg aaaccttgaa tggcgttctg     900
aagttcagtt tttttcgagt gcagatccca ttataagtgc aacataattg taaatttagc     960
aagaagcact cgaacggcgt ctgaatccga gtttctttct tggctgtagt tcagtttgtt    1020
ctgtataatg aaatctgttt ggtcgttata tcgatgaaag aagaaccttt agggatgttt    1080
gtctaatcag ggcatttttg ctcctcacag agcaaaaccc tcttgttaca cgagaccgaa    1140
aagcagctca agtaaaagct gtcttggatg cattagtaga gtgattttct atctctgaca    1200
aaagtcgtcg aacgatattt agtgtagata acgggaaaca gttgtgtgtt tgccgaaaat    1260
acgtatcttt gcaggcaatt gaggggaatc ctctccgttg ctatgaggat tgtctcatgg    1320
tgtatggtag cacaacaggt tttggttctg tttgtcaagg ttcgaatcct tggagacaac    1380
aacagagaaa gggttgtatc ggatagtgaa acttccggat tcaacccttt ctt          1433
```

(2) INFORMATION FOR SEQ ID NO:1131

          (i) SEQUENCE CHARACTERISTICS:
                    (A) LENGTH: 642 base pairs
                    (B) TYPE: nucleic acid
                    (C) STRANDEDNESS: double
                    (D) TOPOLOGY: circular

          (ii) MOLECULE TYPE: DNA (genomic)

         (iii) HYPOTHETICAL: NO

          (iv) ANTI-SENSE: UNKNOWN

          (vi) ORIGINAL SOURCE:
                    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

```
        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...642

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1131

gcacttcgct gaccaacaga ccttttttcat tatagtgata cgtattcttt gggattctgc      60
cccgaaagca aaagaaatcc agtgggtcag tctgcccttg catcataatg atattccaag     120
cgtgagatag gtgtattcgg atccattcca gcatgaatac ttccctcacg gtcatctttc     180
cctcgtcatc ataggttact tgaatcgggt gtcgagtgca ggctctccgc cactgaacga     240
gatataagat ccacatgcga tattcgcccg ttggcatcgt agtaaatgga gtcctggatt     300
ttcttacccc attggctttt atgtcacgag cgatatagcg gttttctcat cgaagataaa     360
gtgagtatct gcagactggt ttgtggagac ggcgctgtaa gaagccactc ggcattgtcc     420
ttctgcgcac gattttgagt cggagagagt aaactcctcc ggcaatatct tctttcgaaa     480
aaggtttgta gaagaattgt ccttggtttg gcccacggct gcaaagaaag caccgaagaa     540
atcaaagaaa taatggttgt ttttttcatt tcaataatga nttatntgat tgtatgactt     600
aagacggatt cgacaatcga cccaatctct cttgggtatt tt                        642


(2) INFORMATION FOR SEQ ID NO:1132

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 838 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...838

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1132

tcacgaccga agaatgccaa aaccaaatta aaaaccagaa gaagattata tcgtagttcc      60
agttaaagaa ggcgagaaca tcgaaagagc actgaaacct tcaaaagaaa gtttgaaaaa     120
accggagcag tacgcgaatt gcgtgctgtc aggcttttga aaagcccttcg gtggccaagc     180
gcaagaagat gcaaaagcca tctacgtgaa gcagcttcag gttgccgaag aataaagaag     240
aataatattg ccgcagtctc tttgcggctc aagaggggtg caatgatcga gaccatctca     300
ttcacgacaa tgaatgaaac acccgacacc atcgaaagat tccctattat ctacgctacg     360
aagttcacgc gtcagaacga accgtttgtg acatgcacaa gatttgaatc gctatgccgc     420
tttcttcagt gaacacacgg ggaagtattc gagccaagcg aacgcgacaa ggatgtcgcg     480
cgcgcttggc cttctcttta atggaagccg gacaaaaaag ctcttccgtt cagcgcagat     540
gagcgcgttg aaaagctttt acaaatacat ggtcaaaatc gggcttatgg gcaaagtcct     600
gtccgaatgc tgaggggacc gaagaaagag aggccgcacc tgttttcgtc ccgaacaatg     660
aaatggaaaa agtgctgaat aagccctccg tgaagatgat ttcgaggccg tacgggacag     720
actgattctg gagacctgta tgaagtgggt ttgcggcgtt ccgaaatagc cactctcaag     780
acaggcggta gaagacaagg ccggctgcat tacgtatcat cggcaaagga atagagcg      838


(2) INFORMATION FOR SEQ ID NO:1133

        (i) SEQUENCE CHARACTERISTICS:
```

```
            (A) LENGTH: 756 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...756

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1133
```

```
gtagacccga ccaatcccga tctgcatgta ggagatctgg cacccgacgc tgtcagctac      60
ggccgtttat tgtgtggttt ggagaagctg ttccgatgta gagccggcca tcgaagaggt     120
aacacaggca gacattctcg ttgtcatggc acctctctca acgtttatcc ggctgccgga     180
ctgttgaatt atgctctcgc aactgcccca tctatctgat cgatccaaag cctgtgcgca     240
gcacccccgg caagacattc ggtatatcca tgctcctgcc acggaaggcg taagatgttg     300
cggcaagaac tccgtgatat agatcgctaa aaaaacacta acccaagaac ctgccatcgt     360
ggtggttctt ggggttaatt gtatttgttc gttttcggaa ggctaatgaa ccggtttgtt     420
ttcggaggca aaccgaacat tagaatgacg atctcactct ccgtgaaaac acgaatagcc     480
ggtccggccg tcctactcct gaactgacat agaactgcgt atgccctttg cgaagatagc     540
ccatgatttt tcaaaagcca gttgggtcaa aatcgtaaac ggccagattg tccgttgtgc     600
gtgtgcccgt acagagccaa gtccacaccg gtcatcgcac gctgtcgagc ttgtgcggct     660
ggtgatcgag caggatagag gccttatggt atcnacatgt ggcataagct tgtgcagcgg     720
agcacggaat acattgtgct atcgtcccgt cctatc                              756
```

```
(2) INFORMATION FOR SEQ ID NO:1134

    (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1206 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1206

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1134
```

```
agaagtcgtt tggctttgcg atacccttta aagaangcgt ctgcaatgtc agccatcggt      60
attctggatt ggtatgccat ggaggatatt atgctgttta atactcaaat atncaaaata     120
cctccctata tccaatgaat taccaaacaa aatatacgcc aatcgccgtg caaaggtctc     180
aaatggcggt ttagcgttgg aaaaacgtgg ctcgggaatt ttttcgtttt ggcgcgggaa     240
```

```
gtaaaatttt acgcgccaca acggaaaaat tctcgctcgt gaatctcaga aaaccgaacc      300
gcattccggc caattccgga accaaattcg tgaggaatct gctacaacgt ctgttcgacg      360
tatgcttaag gcccatcgag gtcaagccct catgaaagtc agaaacaact caatcggatg      420
atcagtaaga cgcgctgctt gtagaacgta ccttcggtag tattcgacga tggttctgtg      480
gcggacgatg cgctaccgag ggttagccaa gacacatacc cggaatatcc ttgaagctag      540
gcctacaatc tcaagcgtat gccggggctt cttgtgcttc aaggcgcaaa taggcgtaaa      600
acgccggcac ctcgagggca attgccctcg aggtgcggaa aggggactaa tccccaagct      660
gcaaaacaga cgagaatggt caaaaaacac cgggaacaag cgagcagaaa gaacagcctc      720
tttgtgcaat ggtctatctt gggattgata gatgaggata ttccccttat cgtccttgtg      780
ctcctattat ttttagttac aggacaaatg tagtgctttg tgccggcttt ggtggtctca      840
gaatttgaga aattcaagag cagattccaa tctcaaatgc aacttttatg aataaccgga      900
aataatacag ctcaatccag atcggccata ttatcttcca ggtagaatcg ggaaaaatca      960
gataggattc tgctcctgac ttcggagttc ttccccgggcc tttttcattt cctcgcggta     1020
ttgtttgcgg cttttttccat ctctcggcgg agcttttccc gctccttgcg ccattcttat     1080
tttgcttttt ctgagccttc atatactctt ggtagtattt ctcctttgct tgcgatattt     1140
tcgcatagcc tccgagttgt caggcttcaa aacattcact ccttgcggaa ataacgcgaa     1200
cggccg                                                                 1206


        (2) INFORMATION FOR SEQ ID NO:1135

            (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 1142 base pairs
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: double
                (D) TOPOLOGY: circular

           (ii) MOLECULE TYPE: DNA (genomic)

          (iii) HYPOTHETICAL: NO

           (iv) ANTI-SENSE: UNKNOWN

           (vi) ORIGINAL SOURCE:
                (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

           (ix) FEATURE:
                (A) NAME/KEY: misc_feature
                (B) LOCATION 1...1142

           (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1135

ttccaatgtt cttcgtcccg catcatcatt gtcgagatag cattctatct gcgataaacg       60
cccaacacta tcttgcgttg tgggtcggga ctatgaagga ctttccgata gagactgaat      120
acatgactaa cggttcatac aacgacttaa aatatattga acgctgtttt gaatgtgtaa      180
atgcctcaaa cctgatcgac agaaatgtcg ttcgacaaat gaattacctt tgttgggtag      240
ttatagagaa aaaggcaatg aatccgccca aaagactgct tgtcattcac cgcgccttgc      300
tccttaccgt atcgaactgc tcaatactct gtcggcagct ttcatacaca tatctacttc      360
gaatttgcat cacctataga acagcgattc gagcaggcga actagccaag cgtgttcact      420
ttcaaagcag tgtacttcct ccgccccaaa aatcccggga ttgaaaaact ttcgtcccta      480
tgccgcctca tggttcgcag tcttcgtccc gatgtcgttc tctgtagcga attcaatctc      540
tgacactgac cctcactgct gcctctcgcc tgttcagtcc gaaaaccagc tgtatgtctt      600
atgcgatgac aatgaacaaa tggcagaagc agagctgact acggtcgtgg cctcaaacat      660
cggatgctct cctatgtgga aggcgtattc tatgtgatag ccgtgcctgt gatctctatg      720
cctctcgctt cgctagctgg atagggagcg attcgtttac ctccccatcg tacaggacga      780
aaagtgctgc gccccctcta tgaacaggtc ttcggtatag gccgggacct gcgcatgctc      840
tcattcctgc tggtgctcgg atgatactgt atgtaggacg ctgtcagagg aaaaaaacct      900
gccggcactg atcgataacc tttccactct accgatgatg ttcatctcgt tattgtcggc      960
gacggcccga tgcagtcagc ctaatgaatc aagtgcaagc tacaggccat ccggaacgaa     1020
tcatatttga gggaaaaagg aaggagcaga gctttatgcc tactatacgc aggccgatgc     1080
ctcgtattac cgagcatgcg cgaatgtttc gttcggtcgt aaacgaactc tcatagcagg     1140
cg                                                                  ᐧ    1142
```

(2) INFORMATION FOR SEQ ID NO:1136

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2284 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...2284

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1136

```
cgaaaaattt tacgctcggc attttcaggg acatgaaaca agttttttcg cgccacttcg      60
cattttcatc tcgaccacta tccgcagtcc ggcgaacctc cgactactga ttttgtttcg     120
tttatatata atagagagag actacagcgg ggacgatgca ggagtccggt atgcatacct     180
tacagtagtc cgaacggggc ttgccgtaga tcagctatgt acaagccaaa gtcaaaaaca     240
aaggacataa gaaaaaacta ctcgtcaaga tgaaaacaac gacctttttcc gtagaggcat     300
gatgtgtggc ggttgtgctg caagtgtaga gaaagcagct ctcgtgtaca aggcgtacaa     360
acggcattcg cttctctgga ttcccatagt ctacagtgga ttatgctccg gagacaacct     420
caccggaggc aataatgaag gtgtacgcct cgccggattc gagtgtaagc tctgacaagc     480
ccaatcctta aacccgatag tccccgtgat atgaaggagc aaaaacgttt ttcccgtagg     540
ggaatgcggt gtgccggctg tgcgcatagc gtagagcagg ctgcctccag gtagaaggca     600
ttagcgatgc gaacgtccaa ctcgccgaga atatacttct gtatcggtgg acgaaaggtt     660
aacttcggca gaggatctgc gcaaagtatc cgcagcatag gattcgacct gatagtggag     720
gattcggagg cagagaactt cgccggcgcg atgccatgga agcagcagaa ctgagacgga     780
tgaatgcgat acgatcatag cttggtcgtc cgccatcctg ctgatgcttc tgagctaatg     840
ccgcatttcc agatgatgcc ctacctgatg atgctcatag cctgcccgga tacacatggg     900
caggaaggac tttccaccga tcggcactca acaactgcgc cacggcgtat tttcaatgga     960
tacgctggta tcgttgagca cactatctcc tttttttata gcctgatagt cctgctgttt    1020
ttccgcgaag gccggccggg atgaagctcc acctctactt cgatgcttcg gccatgatat    1080
cgcatttgtc ctactgggca aactcatgga aaagcgtgcc ggccgaacac ggggcaagcc    1140
attcgtgaac tgatgcgact acagccggcg gaggcatggt cgtgcgcaac ggacgcgaga    1200
ccgtgatgcc cattgctgcg ctcgtgcagg cgacttcgtt cgcgtacgtc cgggcgagca    1260
gatacccgtg gacgtatcgt gaccgaaggc agcagctccg tacaagagag catgatcagt    1320
ggcagccctt accgcgagag aaagaagtcg gctctatggt tttctccggc acatcaacgg    1380
ctccggtgtc ctcaccgtac agtctactca cgtaggcagc gcacggtact cgggcgcatc    1440
atccgcacag tccgcgaggc acaggccagc aagcgcctat ccaacgtctg gctgaccgga    1500
tcgccggcat attcgtacca tagtcatcgg gctatccatc cttacctata ttatatggca    1560
actgacggag cagccgatgc ttcggtctac ggactcctct gtgccatatc ggtgctgtga    1620
ttgcctgccc gtgcgcactc ggtctggcta cgcctacggc tctggtgtag ggatcggacg    1680
ctcggcacga aatggtatcc tcgtacgcaa tgccgagcac tggagcgttt cgctaccatc    1740
gatgccgtgg tcttggataa gacagcacgc tcaccatagg caagccggaa gtgaccggta    1800
tcgattggtt tgttcggata ccgatgtacc gaaagtacgc cggctgctct actccgccga    1860
gatcttagca cgcatccact tgcagctgcc atttgccgag cctttgccga aacggcagga    1920
cggaggagct gtcggaagtc cagaatttcc ccggtcgtgg atcgaatttt ccttcgaagg    1980
agagatctac agagtgggca accagacctt gtcgaggagc ttggcgcaca gataccgacg    2040
gatataaccg ctctgtcgag gatgcagcca tcctctattt ctcacgtgcc cgaaagatta    2100
ttgggacttt ctgtgtgacc cgacgaactg caaccttcag gcagcagaag tgctcgacag    2160
cttcatcgac atggcattcg caccatttat gctgaccggg cgancgcccg aaacaagcgg    2220
```

```
aaagcanttg gcttcgcaag ctggggtttg caggattatt cgtggcggca ttgatgnccc    2280
tcgg                                                                 2284
```

(2) INFORMATION FOR SEQ ID NO:1137

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1184 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1184

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1137

```
ccgcctccac accgacctgc acgaatgcct cggacatggc agcggacagt gctccccggt      60
gtaccaggcg atgcacttgg agaacacgcc tccacgctga ggagacgcgt gccgacctct     120
tcgccctcta ttttctggcc gatcccaaat gatcgaatta ggtcttttga ccgatcccga     180
tgcttacaaa gccaacatta caaatacatg ctcaacggtc tgatgaccca actcgtgcgt     240
atcaacgagg agaggagata gaggaggcgc atatgcgcaa ccgtgcactc atagtcgcta     300
cgtcttggag catgccgagc ggccgggggc aatgtcgctg gtcgcgaaga gggcaagacg     360
gcactcgtga tcaaggacta tgaagcagtg cggcgatcat tgccggtttg ctgaccgagg     420
tgcaacgcat caagagcgag gcgactatac cgccggcaaa gcgttggtag agcgttatgc     480
cgtccacgtg atccgctctt gcacgaggaa gtgctgacgc gctatgccaa gctggatatg    540
ctccgtataa gggatttgtc aatcctcggt tgagacccgt atataattgg agggcaggct     600
tacggatgca acgatagaat acacggaagg ctatgccaac aaatgcttcg ctacagtgca     660
gaatatagct tcctgcctac agacagccgc ttttgcagga ggcacgaaga ttgcgctcgc     720
acctccgacg ggcgaggacg gtgtactatc ggccagtatg cgtgagaaag gactccacta     780
cggctcaact ttggagtcac tcgcgaacat ctgctccgac tggctcgcac ggcgacgctt     840
ccgctccact ggccgactat ctgtggagac gcgatgtaag gggacgaaga tactcgccac     900
gatgattttt ccggccgaag aactgactca tagcaggcaa cgagattgct ccgagaggcc     960
gacaacgtgg aacttcgcga caactgacag ccaatctgct ggagcgaatg cccgaagcga    1020
tccggagcac ggccgatgga tcgagagcaa agagactact cctgacatga tgacgggata    1080
ttgacgcttg cagccagatt ggttacacgc cggcatcttt ccggaagcgt gccggcagag    1140
aactcttaac actggccatt cttcattctt cttccgtgag gagc                     1184
```

(2) INFORMATION FOR SEQ ID NO:1138

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 549 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

```
gcgcgatgct attttcagtc gtcagcgtta ttggggggaa cctttcccct ctactacaag    60
gagggtatgc ctcacgcgct ggatgaagat cgactgccct ccgattgccg gaggtagata   120
aattcctccc cacagaaagc ggtgaacgcc ccttggaaga gctaccggct ggcatacagc   180
cgaaggttat ccatacaatt gagcacaatg cccggatttg ccggtagcag tgcttactat   240
ctgcgtatat ggatccacaa aacgatactg cactcgtcag ctcgatcggc gaataatatt   300
ggcgtcacgt cgatctatac atcggtggta cggagcacgc cacggacacc tgatttatag   360
ccgctttttgg aacaaatttc tcttcgacct tgtatcgtat gcgaagccga acctttccgc   420
aagctggtga atcagggaat gtccaaggac gcttcaactt cgtctatcga atcaagaatn   480
ccaatacatt gtcagctatg gactgctcga gcaatatgag gtgactccac ttcatgtagt   540
                                                                     549
gtcaatatc
```

```
ggcaacggag gattttcaca atacattgag agcaacctct tcgataagct tcgggaggtc    60
aaagaaacac ctgctccgtt tacgctgctg tacgatctct gcatccgtac gggttcaaca   120
gggatcagat acgggaggtg gccacgtttt ggacaatcct cccggagctt ctttttttctc   180
ttcttcgcat cgtctctacg tgagagggat cggcttacag tacttccctt atcgccaaag   240
atggagtgcc ggaactgttc ggccttaaaa tcggagattc tttcctcgat ctgcggatgg   300
aaagcaactg agttggcagc gcggtactcc tgccgatttg gactggaggg tctgcggctt   360
ccgaatacca agctattgtt gcctttggca ttgtagaatc tttacaggag gagcttgggg   420
ttcgccgtcc gcaacgaggg gatcatattc atccttacgg gatgaaaggc tgcaagacgg   480
tgaagccgtt ctttatcgat cgtcacgtgc cacgaagccg gagggaagag gcttggctct   540
ttgccaagga acagaagtgg tatggatcat gggctatgcg gctgatcgcg attcgccatc   600
gatgagctgt cggatacgga agaatatctg ctcttctttt cgggctatag agcttgctcg   660
atggcttttt ctcttgcccg ggagccttct ccttcgcatc catcaggata aaataagcac   720
ggtaaaggcg gagtaggtat aggaatactg tccattgaga cgttcataca aggatttgag   780
ttcgatatgc gagcgggatt ggtgaaatag gggtgtaatt cggaaacgat accgcatcta   840
tataggcatc gggagccaat cgtcctttct ctatcaaaag ggaaggtgcc cttcgatggt   900
actcggactg agtttccgct cggtagcgac ccttctatgc tcatacctgc cagtagcaat   960
tcgagcgttg tctcgtgggt gtcttttttct tttccttggc ttttttctct ttactctttc  1020
```

```
gattgccggg gctgttggca gggcttcgtc cttgggtgaa atgctgcgta cccattcgcc      1080
atcagctctt ccgtccgaag ttcctgtctg ctgaggc                               1117
```

(2) INFORMATION FOR SEQ ID NO:1140

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 643 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...643

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1140

```
aggtttcctt gtaattggct tgccacatca agagcagaag acatcttgtt ccggaagcat       60
tctccttggg tgtacgcatg aagcgttcgg tgtaaaccaa tcgtagaaac gccagtctgc      120
cacaggagca acggctatcc ccgctttaat gtaccatttc cccgacacaa actcattagt      180
gtggtatagc cgccatgctc cacccccata tgccgatacg agctgcatcc acatagggca      240
gctgtctata gcagtggccg ctgctatctg atcatcgctt tcgaatacac cgagtgcatg      300
taggtacact tgcgccattc ttcgccgcga gcaccggtgc caccccatcc acacatgcca      360
cgacgtaacc tttcgatgca aggtagtgtt ccaatcgaat gaatagcgat ccaatacctg      420
ctgggagttg ggaccgctat atgtaccatc aggacaggat agtggcgaga gggatcgaaa      480
tcaataggct cacgatccag gcattcagtt caagacccga ttgagttttg atagtggtaa      540
ctccttcggg ttgtaacgat aggctttcag ccgttcacgg agagcaactt atcctccagt      600
gtacgcagct ctttggcacc tttgcttctg aataccgaac cac                        643
```

(2) INFORMATION FOR SEQ ID NO:1141

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 637 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...637

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1141

```
ggttgccgag cagaatttgg gacagtttgc actctatctg cgaggcgaat tcccggattc    60
cacccgctgc agttcaaccg tgtgaccggc cagccgctgt tatgagtgag atggtagaag   120
tattcacgca aatgatggag gagaaatatt atgtcagaaa cgactaagtg ccccatgtac   180
gaggcaaaag actatagagc gatcagtatg tgcgttggtg tccgggttgc ggcgaccacg   240
ctgtgtagta accctccaga aggcaatggc cgaaataggg atccctcccc atcaacggcg   300
gtaatgtccg gtatcggatg ttcttcccgt ttgccatact atagaacacc tatggcttcc   360
acaccattca cggtcgtggt gcagccatcg cgccggcgtg aagacagcca atccggagct   420
ttccgtatgg ctcgcatccg ggatggtgac agcttggcta tcggcggcaa ccacttcatt   480
catgccgtgc caggaatatc gatatcaatg cagttctctt caataaccgt atctatggtt   540
gaccaaaggc caatactctc ctacctcagc tcgcggattc gtatccaaag ttctccctac   600
ggtacggtag aagatccgtt tatccccgca gaactgg                           637


    (2) INFORMATION FOR SEQ ID NO:1142

        (i)  SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 1169 base pairs
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: double
             (D) TOPOLOGY: circular

       (ii)  MOLECULE TYPE: DNA (genomic)

      (iii)  HYPOTHETICAL: NO

       (iv)  ANTI-SENSE: UNKNOWN

       (vi)  ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix)  FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...1169

       (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:1142

tgccgtcaag caatggggca taaaagaaat aacaggagat atcatcgtca tgcatcagct    60
tttgacattg agggagtcaa tgacagttgg ctcgatgaga caaaggcaac tatttcggtg   120
ccggcgtcta tggatttaac atcaatgtaa tagaatagat gtcatccttg ctacaggcaa   180
agcaggctcc gaagctatat cctgagaata gagcctcctc atccggaggt tcggtgggaa   240
aacagatcga ggtaatccac cgaggaaagg atactgccgg atgctatggc gaaggttgga   300
tcttaagcga acccttacgg gagtccttcc gacaaatatc gttcctaccg cctcaagacg   360
gatttgcccg atcctgctct atacggagct gctgggccaa aggcttattg tctgctgccg   420
gcactctgtg ccaagggaag tccgtgcctc atatcaagcc gtaccgatca ctcaagaatt   480
attaatctac aatcccttcc attggattca ttggtgcggg tgatgaattt ccgtagtcta   540
atcattttgc agaggctttt gtcaaacagt tggctcccct tgcatcgaga atcatcgggg   600
taatacaaca gagcgtggtc tgtccgtcat ccgaaacatt ggacttccca aacaggattg   660
cagcataccg acatttctct ttcggaggat ccggtctttc ccgtaaaaat cgctttagcc   720
cgaatgccct cagccaatac tgatcgatat gatcagtcgc ggcgatcttg ttaccacttc   780
gttctgaata gcctgcctct cgcaggaaga gagggtacgg tgaagaactt cataaagacg   840
aagcaataga ggcatacctc aagagtggta gtatgaaagg tgtttagggt atgccggcta   900
tgtgcgattc caaggagaat ggtacagcgt ttattgatgg gtaatgattt ttcttcttcc   960
gcaccggttc gtcgtgcttt tcggattttc ttctctcttt cttctcttcc gctatctcta  1020
ctaagcaagc ctgctaaagg aaaagtaaac agcagcttat ttcgtctcat tcctcttact  1080
gatctcgtgc caatttttatg tagggatgat tgccgacaac aagcataata tagctctcta  1140
taggtattca ttcgcgttta agtcgcacc                                    1169


    (2) INFORMATION FOR SEQ ID NO:1143

        (i)  SEQUENCE CHARACTERISTICS:
```

(A) LENGTH: 1042 base pairs
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: double
                (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
                (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
                (A) NAME/KEY: misc_feature
                (B) LOCATION 1...1042

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1143

```
atcgtcaatg gccgggtgaa atggccgatg ccgactatgg ctacgtaggc cgggtccggg      60
acgaatcgat ctgtataacc agaagatatg tgttcgtctg gtattcctca ggagcaggcc     120
gtacaacagc ttatcgaact catcaaaaaa acggagactg gaaagagcgt tagttttcg      180
gaaggactat ttttctagtt gatcactttc ctctcagaga cccaagcaat gaaaatcaaa     240
attataatcg ctcgcatcat cccttgccga catatgcgac ttcggcatct gccgtatgga     300
tctgcgtgca tccatcgaag agcctatcac gttgttgcca ctcaacgtcg tctcattcca     360
acaggcctct tcatcgaact cccggtaggc tagaagcaca gatccgcccc cgaagcggac     420
tggctctccg acacggtatt agctggtcaa tagcccaggg actatcgatg ccgattatcg     480
cggtgagata ggattattat gatcaatctc tcgaatactc cttttaccat agcagatggg     540
aacggatttg ccagcttgtt atcgccagac atgaacaggc cgaatggggc ttacagacga     600
attggccgat acggaacgag gtgcaggcgg atttggtata cgggcaaaga ataattttca     660
atctcccttc aactaccaca gatgcgatcc attctatcat tctcctgctg tttctttag      720
ttatttctcc tgtagcggaa gtatatccat tacagacagt acagcatcta agttcgaccg     780
atattctatg aaggtgtccg gcagcgagaa caggagaatt atgctgcagc tttgacatct     840
ttcgctattg ccatcggttg aatcccaacg atgcggctct ggatcggagt tgggaaaact     900
ggatatttgc cattgggcgt caggaggaag gaccccggta tttggaacaa agcctatcgg     960
ctctatccga ccaccaagga ctatggcaat atattaaggt gctgggtatg aacgccaggg    1020
acgagctgag atgctgcagg ct                                             1042
```

(2) INFORMATION FOR SEQ ID NO:1144

        (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 304 base pairs
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: double
                (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
                (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
                (A) NAME/KEY: misc_feature
                (B) LOCATION 1...304

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1144

```
tcgttcgttc aagggtcttc ccaaaaataa acagttgatc aagtatctgg cgaacccggc       60
atcaagagct ccatgctgaa gaccgaagaa gcatacatgc tgaaaacatg aggaatatgc      120
atttggtcac agacgaattg tatttcacat agatgaaaag cgtaatagcg tanagcttac      180
cgagaaaggt atcgacttct gacgtcccgt acagatgacc cgaaattctt cgtcttgcct      240
gatatgcagc tgagttatcc gctttggaca atatggaatc cgatgcataa aaacttgcga      300
agcc                                                                    304
```

(2) INFORMATION FOR SEQ ID NO:1145

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1024 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1024

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1145

```
gacaaggaca cgaagcgctt ctggttgttg ccaagagggc cgaagccaat cgggacttgt       60
gcaagcaatt ctattataag acgacggcat cgttcctacg tgcactggta tggggacgtt      120
tcgactaccc gatcgggaac cattaccgca atataggacg cgacctgaaa gaccgcctgc      180
aaatggcggt attcccccccg atggagatat tggcaaaccg gccgtaacgc attatcaggt      240
cttggagaac tggcatacgt cagctggata gaatgccgtc tggagacagg gcgtcccatc      300
agatcagggc acacatgaag cacataggcc atacgttgtt tgcgacgagc gttatggcgg      360
cgatcaaatc ctgagaggaa acaatacggc cattaccgcc gattcgtgca gaactgtttg      420
gctatctgtc cacgacaggc ttgcatgcca agacattagg ctttcgccat cctgtcacgg      480
gagtggagat cagttcgact ccgatatacc tgccgatctt accactttgc ttgagcgttg      540
cgtacgttta tcgcctgcat atctgcagga caggactata tctgaaccat cggctgatc       600
ctcatacaaa tagtacaata ctttccccta catattaata aacagaacga tgaaaaaacc      660
aattgtggct gtcattgcag gcggtttccg ggcgaacatt cggtttcgct caaaagtgct      720
gccggcattc tgtccggctg ggaagcgagc ctttctccac ctttcttgtt ctgatcgaac      780
gtgacgctgg tcggtaagag tatcggagca gagagaggtt ccactggata agacgatttc      840
agctttgatc tcgatggcga acgaatacgg tttgactatg ctatatcacc atacatggaa      900
ctccgggaga gaacggtctg cttcaggggt actcgacatg atcggcatcc catacaatac      960
gggtgacncg ctcgtcgaat cctgactttc aacaaatatg tgtgcaatcg ttttctctcc     1020
ggct                                                                   1024
```

(2) INFORMATION FOR SEQ ID NO:1146

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 670 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...670

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1146

```
agctccgatc cgattagtgt cagaagccat acaccgcctg ctttccatca agccataacg      60
gaagtgaatt atgcacacga tcccaaggcc gaatttttag tccagcgata gatcccgaga     120
aaataacggt gggcttcatt ctcgatctat agatcgttat gggagcgaac acttcaaggt     180
agacaataag gtccgatcgc tcccgaatgg caagcgatag aggattcccg tcagagcctg     240
cacatccccc tgcggacacg ctactaaaga atttgtagga gcttattctc tgagactcag     300
agtattctga ttactcagag tactcggatt gctcggactc gaaagagctg agatccggcc     360
gtagtcggct tgtatttgtt gacgaagagc ttcaaactat cgaacttcat atcctctctg     420
ataaaggata caaactccac tgtatctgag atccgtagat agtttttatca aattcgaaga     480
gattgacttc atcgttcgct ggtcaccgtt gttcaacgtc ggcctgcgac ctatatacac     540
atgccattgt atcgttcgcc acttacaatg gctctgacgg catagaccca tcgcagggga     600
tcaacttgtg actgtcgctt acagtcagat tggccgtggg aatcccaatt cgggcccaat     660
cttaaaccat                                                           670
```


(2) INFORMATION FOR SEQ ID NO:1147

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1136 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...1136

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1147

```
ncngttgcat gcatttcgac tctttaggat cccnggcccc tctgcaaaaa ctggcgcggc      60
ggtagagcag caggcggcaa tatcatcccc tcttccacgg tgcagccaaa gcagtaggca     120
aggtgatccc cgaactgaac ggcaaacgac gggtatgtca ttccgtgtgc cgacactgga     180
cgtatcggta gtagactgac atgccagttg gcgaaaccgg ctaaatacga agatatttgt     240
gctgcatgaa gaaagcttcg gaaggcgaac tcaaaggcat tttgggctac acggcgaaga     300
agtggtttcc tccgacttca tcggcgaaac ccgtacttcc gtatcgatgc caaggccggt     360
atcgcactta cggatacttt tgtgaagatc gttcatggta cgacaacgaa atcggatact     420
ccaacaaagt actcgatctc acgcctacat ggctaaggta aacgcataag acttctacga     480
gatccgatcg atctttcatt actccctcac ggggctgtac cgaaggaact atccgggtaa     540
gccccgtgtt cttttccgga tattatcgac taaccaattc ccctccaaat catcagatag     600
ccgcacgtca gctctcttcg gactgtctat ttcgagctcc tgactgcgat attcgcccgg     660
actcataccg gtgtgctgct tgaaatcttg ccgaaaaacg actgggtgga gaagttcagc     720
```

```
tcatagccga tctccggacc gtcttatccg tatagcgcag caaggacttg gcctgctgga      780
tgataagctg ttgatgactt tggaggcaga ctgtcccatg acggtcttta tcgcagtgcc      840
aaatgtttgg agctgaggca cagcctgtct gcatagaact tgccgtatgc tgctctttgt      900
gatgctcgga gacgaggagc agaaagtcgc gcaaatagtc tccgacctgg tgtgcttgca      960
gtccttctcg acctcgtcgg aatcatatcg tcnagaaaga gaaagagaga gctgatcnga     1020
tagatgacat ttcttcctga tgacgccccc cgttttgcag ggcgttgcgg atgagatcaa     1080
cgttgccgtc agaaaatctt tctccatgcg ttccggacgg aacggttgtt gctgtg         1136
```

(2) INFORMATION FOR SEQ ID NO:1148

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1311 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1311

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1148

```
attacacggg caagggtatc cagtcggcct attggaagat ttcgcgcgac tgaagtttgg       60
caagctcccg tttccattca tttggagtcc aacggaggct ctccacaagc tttactttcg      120
gacacgatgc tctaaatcgg tgccaccaca cctacaacaa cccctccttt acacgtggat      180
ttacgatcac gcccattaca agcatctggg tgcgcacgac ttccacacct atcagatcac      240
cggcattggt acatgcacct ttctggacgg tctgcttacc ttcaacggct tcctgatctt      300
tggggtttcc cccaagagaa cccaatcggg ggccctgtgc tcaagaaggg gataagttcg      360
tattcctgtc cgaaccgcag ttctggatca actcaatcgc atcaaaggca tcgacaagga      420
tttcaatctc agcataggga cgagatggaa atcagcagga acttcgctcg catggacaaa      480
ttctcctgca ccctactctt gcggtcaaat ggactttcaa ctgaacgaaa ctcttcagta      540
aaaatgaaaa cttggcaatc cattctcgga ttcaatcccg agaagcaccc gtccgaacgg      600
agtttattgc aggggtgacc actttcctga ccatgagtac atcttggcgg tcaaccctga      660
tattcttgct gcagcaggga tggacaagga gccgtattca cggccacggc actttcttcg      720
gccgtggcta cgctgtgatt gcattttggg ccaagctgcc cttcgctcaa gctccgagca      780
tgggatcaac gctttcttcg ccttcactct ggttcaaggc atgggctact cttgcagact      840
gcactggctg ccgtctttgt ggaggggatc gtcttcatcc tgtgacggca ttcaatatcc      900
gtgagaagat cgtcgattgc attccttaca actgcgctat gctatctcgg ccggtatcgg      960
catgtttatc gctttcatcg actgaagaac gccggtatta tcgtatccca tccggctaca     1020
ttggtcgctt cgggcctttc actccgatat tcttgctggc catcctcggt atcatcctag     1080
cgcggcactg gtcgtgcgca aggtgcgagg ggctttgttc tacagtacgc catttgtacg     1140
atcgtcggca ttccgctggg agtgacagcc attcccaagg atttgcccct atctcctctc     1200
cgcagagcct aagtcccact ttcctcaaat ggatttcgcc cctctccttt cgttcgatat     1260
ggctatgacg atatcgctct cgtcttcatg gatattttca atacgatcgg c             1311
```

(2) INFORMATION FOR SEQ ID NO:1149

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1141 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double

(D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1141

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1149

```
cagttgcata cgaatttcat cgcccttgag tcccataccg atgaaccttt ttcgcgggtt      60
gatatagagt tttgcattgg cttctgccac cttcgtggct gaatggtgct gaaaccgata     120
agttgtgtcc ttcgcgggaa acgggaacat agtgctcgtg cagatactcg aaccaacgga     180
tggtgtaagc agtaattcac ggatattctt ttccagttcg gcaatatcct tttcgagctg     240
aagcacatgg cctcgtgctt gggcaaattg aagcggagga tccgtgccat gcgttttcca     300
acaacttctt cagatcgtcg taggtaatgg ggcgaataaa acgtgggcat aaggttccag     360
cctcgcctct acatgcatga gagcatcctg ttgctctcgg cctcttcgaa ctcacgatct     420
ttatagatac gctcttctat gaaatccgct cgagcgatgc tgccaaatac tgttcccgct     480
tctcttccaa cggatcgtca gttcttgctt cagcagctcc cgtgttcgct ccgcactata     540
cgcagcaaat cagtcactcc caagaatacc ggcttgtcgt ccatgatgcg caagcattag     600
gcgactgact tacttcacag tctgtaaagg catagaggca tcgatggttt tgtccgaaga     660
tacacccgca gccagatgaa tacgtaatcg gcttcggcag ccgtcatatc atctattcgt     720
ttgatcttga tcttgccttt tcattggctt tcagaatgga ttcgatcagg gaagacgtcg     780
tcttccacag ggcagttcgg taatgctgag agtacgattg tccagtttgc gaacttagcc     840
ctgctcttga tctgtcctcc gcgccggccg tcattgtacc ggtggcatcc atcataccac     900
cggtagggaa atcgggataa agatcgaaag atctcctctc agatgtgcga tacatgccat     960
gagcagttca ccgagattgt cggcaagacc ttggaattca aacctacagc aattccttcc    1020
gtgccttgtc caagagaagt ggaaacttta cgggcaacgc caccggctcg tcctcgcttc    1080
atcgtaagaa cgtttccagt gcgtaatctt atcattgaaa agagtctctg agccaaagct    1140
g                                                                     1141
```

(2) INFORMATION FOR SEQ ID NO:1150

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 469 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...469

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1150

(2) INFORMATION FOR SEQ ID NO:725

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 362 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...362

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:725

```
catatatata cagagtcccg ttcatcgccg tgcgtattat cagcgatatg ccggcgaagg    60
tcgggataac tttgcggagt atatggactt ctggcgcagg cttctccggc tacctttct    120
attctcgaaa gagtattcga tgcaatgaga aataagacaa tcccgatatg gagatggaaa   180
aaattcccag ttttcattag atcatattcg cctcaaacga ggcatatatg tctcccgcaa   240
ggacttatag ggggagaggt ggttacgact ttcgatattc gaatgaaaga gcccatcgcg   300
aaccggtgct tggggcaccc gaacttgcat acgatcgagc atttggctgc aaacttatct   360
gc                                                                   362
```

(2) INFORMATION FOR SEQ ID NO:726

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 393 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...393

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:726

```
agcagaacgg cggcaggaga gccgagccgc cttttcgccg gctctctcgt gcactgggag    60
ccggggggcgg catggaagct gaatgtctcc gtccgccagg tcattctttt ggcggtttgg   120
agggatttcg ctccggctat acgcgcagga ctaccgcacc tacctgcttc cttcgggctt   180
catgagcgag aggcgaattc gggggcaaac ttttcggtcg attatggcga cgtgctgcac    240
```

```
ctgtttattt tcatctgaaa gccggatatt cgcgcagtcg ctccaacgaa ttgcccactt          300
cgactcacgg cggaacataa tatcatcccg ttacgagcgc tatggcaccg atcttaacgc          360
ttttttttcgc ccgatatgcg tctgagcaag ttt                                      393
```

(2) INFORMATION FOR SEQ ID NO:727

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 468 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...468

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:727

```
ggccgttatc agtatcgggg ggaacctcct gcggattccg ctggctctgt gcttatcggt           60
atgggcttcg gaccggaatc cgtatggtgg gcgatcagct ctcatccatg ctcaaaggct          120
tggccatcgt gtgtggactg ccctatccaa cagacgaatc aaactacaca gccaacttct          180
accctcttcg caatgaatac atcgcatacg cattcgaact cacacaccgt ccggacgaac          240
tgacttggag acggcatacg acctgcttag tgccgaactt gccgaaatag gattgagagt          300
ttcgagcaaa acgagacttg ccttcgtgct tatatccctg gctcaccgat atagcatccg          360
acattcctgc gctattggag cagttttcca ctccgggggct tctgtggcaa atactcatcc          420
gagatccaac cggatatcaa cggaacgaac agtgggaaaa gaacttct                       468
```

(2) INFORMATION FOR SEQ ID NO:728

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 263 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...263

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:728

```
ggatctcttg ataaattggc aattccaatt tatcaagaga tccctctttt tttgcgtgag           60
```

```
agatacttca tcacagatgg atttgcttat ttgctcactc tataattcaa cccaacctgt        120
ttttcattgg gtttgtcgct caaaaaggaa tagatcccct cgtaaaatag ttggcgtgta        180
ctgaatgaaa aacataagag accattgcac aataaccctt ccatctcctc atatngatca        240
aaacaacaca tgcattgatt cgg                                                263
```

(2) INFORMATION FOR SEQ ID NO:729

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 491 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...491

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:729

```
gatggatttt tcttcctata caatcctttg ccttaatcgg ctcgatgcag gataccggct         60
ttcggtatac ccaagtgata gcataaggga cagaatgtga acaaaatcaa gaatggatat        120
gaagcagaaa aacgcctata accgactact aaccactacg acgatgtcct caccggacgg        180
aaatggtggt cttggcctat atgcactgtc tctggaaaac ggacgacaat atcatcgcag        240
gctcgtgctg gacatgattc ccggcaactt cgagggcaga atactcgacg tcccgtagga        300
acagccattt tcacctatga caaatacagg cggatgcccc aagcgagatt gtcgggctgg        360
actattcgca ggaaatgctc gacatagcag cgtgcgcttc agtgcagagc aaataaccaa        420
cgtatcgctc cggcaaggcg agtcggcagc ctgcctttcc cgatgcgggt ttcnacctcg        480
gctcttcgat a                                                            491
```

(2) INFORMATION FOR SEQ ID NO:730

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 599 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...599

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:730 •

```
tagaggttcc ccggccaact catcggcttg tgcgtggacg acgctaacga tccgaccaga      60
ccgaagctcg tatggagcgt tggatcgctg ccatgggctg taattaatgt tctctaagag     120
ccggagatcg agatcagagg gaaactgtta gcgcgaaata aaagcgtatt tgtcatcaaa     180
gcttactcct cttctcgcct tcggctctct cgttaccact cttttcctct tccccttctt     240
tccgtattta ttcgactcct gacgatggac acgcaaacac tcaatagcga tctggcgtat     300
tcatgcacca tatatacgag tttgaaaaag gtgtgcgaag catgtactcg ccacactggc     360
taacgacgac atcccatatg cggaagaacg gcgcgaagcc ggcagatccc ctatttcgcc     420
cagcctactc cgaatacgga ggtaccaatc tcttttttcgg ctgcaaggag tgtatgggag     480
gctatccgtc tttcgtgagt ggacgcttct ctgaacaagc ctgacttccg gaggaagaat     540
catcatcggg gctatgctcg gatacgatat ttgcagacag tgcgaacgta ttggtcgcc      599
```

(2) INFORMATION FOR SEQ ID NO:731

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 664 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...664

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:731

```
tcccccagct tccaatgtac gaggttccag cccttcgggc agaacgatcg ttgtttgttc      60
tcttgagcac gtctgataac gtcttgaatg agatccatga taataccttta tagttattat     120
agttattgta atgatgatct tgaaaagaag gcgagcagaa ataacgcctt gtttgcagtc     180
gcaaagatag ttaaaacacg ggcaataaga gagatacatt caaaatactt tggaaatgga     240
agtatgcttt ggcagggctg tacttccatt ctccccattg cattaatatc ctttttgctg     300
ttctatctag tacgtgacga aagaggatga cgcaacccct ctacgacttc agatagactt     360
cggctgcacc gattctcagc tccatcctga taggacaggt attctattgg catcattcgt     420
gagccatatg gtaatagcct tttgggattc ttgaatgttt cggattcgtt tatgagcatg     480
gatacccgat agtatgatag ttgataccct ttttcgtttt ttgtacttca gaactttcga     540
ttgaaagaaa cagtcgatcc ccttttttccc tgcaaatatt cttaccggat gcgctctttt     600
gtactctttg accagtcttg tcgagcgaag atagagttgg ctcctatcat atccagagat     660
attt                                                                   664
```

(2) INFORMATION FOR SEQ ID NO:732

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1446 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
   (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
   (A) NAME/KEY: misc_feature
   (B) LOCATION 1...1446

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:732

```
ccgtcactga tgatgctgat ctgctctatc tgtccagcag gttgtttgca gattgtcttc      60
ccgtacttcc ttacgagcac atggttgcga ctgataccat gaaagctcct ggctcggtaa     120
ctaccaaatc gaatatctct cccctctttg caattgtctt ttttgctgct cacgcaggat     180
ttcgctctct ttcttttcgg gaaattgtct gcacttgaga ccactgtctg ccgcatagcc     240
tctcgagagt ctgtttggcc gtttccgaag agagaaagcc cagccgtaga agatgtcctt     300
ggcgctтttc cgagcctcgg aggtcggtaa tgatgcgatg tgatggcata gacagtggcg     360
gcaacttcgt caatagcctc tatgtccacc tttcgagcag tttgcggtag tactgctcca     420
tgccatggat tgtctccgag aagctgagaa gttttcggtg tcgcgatgga gcgcgagtgt     480
gatcttcgt tgagtccctc tttcttgtcc cggctcatgc tccttgaacc atctgcacaa     540
acgtaatacc gaggaaactg aaagagcttt ttatgctcga taccacaagt ccctattcag     600
cttcagccct ttgcggtatt tcaaatgttc gctcaggctt ggagagcatt tagcggatct     660
actttctccg gcaagaagag tagcagtcgt cggcatagcg gataaattcg gttgttatat     720
gcccggcgat gtagcatccg tgtcttccaa gtagaggttg gaaagcagag gggccagagg     780
gcttcctgtg ggatgccgga ggatgcacga gcatattgct gcttccggtc cacactccgg     840
acttcatcca gaggctcaac atacgggtaa ggaagggatc ttggttgttc tttggacttt     900
ctgcaataga gaggggacag ggatagaatc gagaagttgt caatatcgca gcgcaccact     960
gtatggttct catccagaga tccagcagat gctgcactct acgaacggca gccacagctc    1020
ccttcccctg cgataggcat agctctgtgc aatggataaa gactcggtga tcggataggt    1080
atgccggcaa ggcttctctg caagtggaga tccactgccg aagggattgt agctgtcggt    1140
aagagccatc ccccttgggt atgttcacag agtgatgggc tgcggtatat agctgcaaat    1200
acgtagggct tccaacaaat cttgtgctcc gcttctgcca tgggaaggtc acgatccgca    1260
gccagcgaag agagcacttg cgatacaagg tatcgttgcc cgagtgctct ctatctgacc    1320
attcccacga ttgtatgatt gcctatatgc acccaatgcg ccattgagag cadaggctgc    1380
ttacggatcg tagggaacac gatagaagag ctgacccaat agccgacatg tcgtactgct    1440
gtttcc                                                               1446
```

(2) INFORMATION FOR SEQ ID NO:733

   (i) SEQUENCE CHARACTERISTICS:
      (A) LENGTH: 620 base pairs
      (B) TYPE: nucleic acid
      (C) STRANDEDNESS: double
      (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
      (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
      (A) NAME/KEY: misc_feature
      (B) LOCATION 1...620

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:733

```
cggccgaagc ttttcgatcg gtatcagtcg gatgtccttg cacacgtcca tcggatcgcg      60
```

```
tacgggctcc  gtcccgagca  gatagagtat  ttcagctagg  tagcaccttc  gctttcgatg       120
aagctactac  tccatagcgt  aaagctgctt  tcgtaggaag  ttcgccattg  tgacggcgag       180
cgtagtcggc  cagcattcct  ctgccatctt  cttccctttt  tcccatgcag  ctgctgatgg       240
tgtggctcgg  cattgataga  gaagaggttt  cttccggtag  gaagcgtctc  cggatggcga       300
tatagtcgcc  acccggcgaa  ggtgccgtat  aaccgccgga  gaggcgttca  tcatagaggt       360
cagctccagc  tgtgggctgt  ttttgagtgc  ctatagtaga  aaggtatctg  ggcaatagca       420
tgcttgagtt  cgctgatgct  cctgccatgg  ctttgtcttt  ggaggtaagc  tctcgtactg       480
gctgattcgt  atggccggtt  gcttggcttt  cgacttatca  ggcatcatag  cttttgcctt       540
tccgaatgtg  ccgcttgcat  agaatccttg  ccgtgagaag  gcgttgcggc  tctgctccat       600
cactcttcat  cttggcggcc                                                       620
```

(2) INFORMATION FOR SEQ ID NO:734

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 354 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...354

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:734

```
ggcgaagctc  ccgacgttcg  ccgcaagttc  gtcgcggcag  gcgtggcact  atccttgctg        60
tgagcggttt  tcacgtgggt  atcgtattgg  ctgccctcgt  tttctcatgc  gtattctgcc       120
gataccgcag  cgatggcgtc  gggcagatgg  ctgcttccgc  ttgcagggggg atggatatac       180
gcattcgttt  gcggttgggt  gctcctgtag  tccgagccat  gctgatggct  accttatata       240
tagtcgtaaa  tgctcgggca  gaccgtacgg  atggattgaa  tgtttgggct  gcggagcgtc       300
cattacactc  gtggatcgat  cccctctctt  ttttatgacg  tgggatttgg  tggc             354
```

(2) INFORMATION FOR SEQ ID NO:735

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 524 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature

(B) LOCATION 1...524

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:735

ccgacaaaac tcacggaaat gttcttctgc gtaaaataag aggttacgga cggtactccc   60
gaacttcgtc ataaatccgg ttgatcagct ccattcgtct ttgtcgttca tcgacagggc   120
attgtttttg agaagcgttt tcagctcttg agcgactcac cgctcatttc aagcagtttg   180
gcatagcccg atgccaagcc gaaagttctt ccggactgta gttcggatct ttgagcatgg   240
agcgaacccc gtgacgtaaa tatccgtgat atcgcctacc atcaggatga tctctttacc   300
ttgtaggcat ccccgatcag gttattgacc cgtcttgagc gcgcgtaagt attttttccc   360
ctgatgatag actttctcca cttccttgaa gtgttcaggg tgttttttac cgtcttggaa   420
gccgttgcga tctccttgac ctgttggcga tgttgccggc aaaatttggt cggatcggtc   480
acgacccact ggcattgtac gctgccacag cagaccggca gtac   524

(2) INFORMATION FOR SEQ ID NO:736

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 395 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...395

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:736

gcttgtaatc agaatgccaa gggatcgggt cttgccataa gtacgcctca attagaataa   60
atggagctat agagccctac acgacttctg cttctacgag cttgttacga ccacaacatc   120
acaatcggac tgtaaagctc ccaaaaggta aaagtggtgc aaacggtcgt aggtggagaa   180
actacccca aggcattttg gaaatcacgc tgccgttggg ctttaagtat gtgacgggtt   240
cttatctccg gacaatacgc atncgggagg agtcaatgcc tcacctgccg gaacgaagaa   300
gtcactttga ctcgcgaacg gtgaagacaa gattaagata aattcaaggc cgggtctgac   360
gtcaggtcaa tcgtttgctt ataccactcg aatga   395

(2) INFORMATION FOR SEQ ID NO:737

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 562 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...562

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:737

```
gggcaataac taccgttctt gcatcgtgac agcagaggct gcattgaagc ttatccatac      60
accaagcatc gcgaagagct ggtcttcctg atgcttcagc tatgtacgaa gaggcctctt     120
tcagcgtcag tgaaaagttg caaacgctta ccgtgatgta gcggaccagt actttgccta     180
catcaacgaa tttcccacgg gaaatacctc aagcaagcca aaaagatcta cgacagcgtc     240
agcaacatat ctcacaagac gcttgacgaa tgctcataca cacccgggga gtctccatcg     300
cagcaacata aaggagacgg cagagggtgg atcaacaacg gaacgatcgg aagaaaaagg     360
ccctgacaca agttccgact aataacaaaa acatcaaaaa gatatatgga gcttaagaaa     420
atgaatgtcc ccatggacac cttacacgtg acatggtgcg tctgagcgaa gacacggaga     480
acgtgtacga gacagtgatg atcatagcca agcgtgccaa tcaaatcggg cagcaaaata     540
aacaggatct tggaaagaaa ct                                             562
```


(2) INFORMATION FOR SEQ ID NO:738

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 926 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...926

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:738

```
tggcgcgaga atgaaaaaaa tctcgcgcca caacgaaaaa aaagtcgcgg tattttgcag      60
aaaagcggtt ccgcttttttc tccttttcac gctcgtgatt tcaccccctg ctccggctgc     120
acacccctct ctcctgcaga atgaatactt tcaaataccc ccccccgcaa aaaaacaatc     180
aggacacaga gtggggggtat atgccactct atgtcccgat tgcgttagga gggaaatgtt     240
gcttaggatt cgccaccgtt atcgtctgtg tgtggaagta ttttgaacga gaagaactgt     300
gatcgtctca gccgaagcag atttattcga tttgaacatc agtccacctt gcgatcggtc     360
gggattgccg tcaggatata gtcgtaaaaa ggtttccggc ctcgttgcca aagataagcc     420
cctgaccacc ggagggataa agttgttcgt cttgattcgg aaagtagtag gaagcaaagc     480
cggattgaaa cggccgggat attcatgacg atgttcagtg ctttatcctg cgtcttatga     540
cctgacaaga gactgcgttc gaagtggctg tgtattctgt gaatgcattc ctgcaccctt     600
ttgtgtgcgg actgcaaatg gattggtaac ggnagggttc ctcactacca cacgcaccag     660
acgtttgagg tcaggattat cttgtgtccc acaatgatgt ctgacgtaca tgagcctgaa     720
ccgggtgttg cagccatgac aacgaaatcg taccgttgtt gttagtagca ccggttactg     780
catcccgcta tatgtgacgg tgatcagatt gttctgctgt gttacgttgc caaattcgga     840
taataagccg ctttgattgt gcccgttgtc tgcccatcgg taaggccaag taagtatgat     900
ccacttcgat cttacctttc cgggga                                         926
```


(2) INFORMATION FOR SEQ ID NO:739

(i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 2787 base pairs
    (B) TYPE: nucleic acid
    (C) STRANDEDNESS: double
    (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...2787

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:739

```
tgaacttaca gttcttaccg ggcactgtcc tgcaacatgg caacattaca cctgccaaag      60
aaaaatcctt caaagccgtt tgccactgcc cgagggtagc tgtacggcca agcgaatatc     120
cgtatgttcc tcggctgaga gaaagcttaa tctccctgtc cgatcgtaca ggcatagccg     180
ctgggaaact tttgtggata gaattcggtc tatataggaa ttgtttccga ccaaaggccg     240
gcgcaagcca ccgctgcgag agtagaaatc gtacagccat gtttcggcag aataggaaa     300
ctacagatat cgccacggtc atatatggct gaaagagctt ccgcatcatc gtgcgcataa     360
tgcctttgcc acgatgatcg gggtgtgtgc atctccggaa atataaccgg ctgagaaaga     420
agtgccaaaa attcgcagtt gtaaggaagc atttgcagat gtgctacagc ctctcctgtc     480
tcgctatact tagcaaggta taatcctcac ggaaaacttt gtggaaataa agctcaatga     540
aggctcaggg tctttgaagc agatgcgcca tagccgcaca gatgcttccg cttggattcg     600
gtcatgatcg cgtcgcagta tggctgtttg tttgggcaaa gaatggcagg gcgataagat     660
agtttggcct ggcgcagtcc cggcagccca aatcctcctc gcgattgatg tagcggaatg     720
tgtccggtat cgaacggcaa attctctatt aatcatcgca aacgcgcctt ccaccatagc     780
atcgcctttt cgatatgtac cccaaaagtg tcggtattga taggggagcc taacagaaag     840
ccactacccg gccaccgact cgtagtactc cccccgaaag cccagctcct gacgatgccg     900
aaaagcacgc tctaccatct ctacctccag cctcttccgt cctgatcacc tcggctatcc     960
agccatagat gagccagcat aagcattctt cggcatcgct atccttaaca ggatcgtatg    1020
tatagtcaga tagagagaga caaatttatt gatatgattg cgcttggcct gcaacttttg    1080
cctgacaaag tcgctaaact ttcacgttcg tatatgtagt cgcaatagct tcatcctcga    1140
taaagtaata ctcagccgag caatgttcct ctatactcgg tgaatatcgg gagtcacacc    1200
cataaatatc aagggataat cttcggcact acttctgctt tcagtcgatg ggcagcggcc    1260
actacttgct caggtcagct cccacaggaa agagatagac cggatgacta cggcttttcg    1320
gttgaaacgg atgatcagac agccctccac aatagcccaa gacgtgccat agcgaaactc    1380
cagcaataga gattggaaaa agccaggtcg caaattcttg cactgaagaa aaggtgatag    1440
ttgttatagc tgatctgtca gcaggttcta cggtttgaat ttaatattca ttcgcattgg    1500
ttttgtcacc ccctgttcaa tagaagggag acgttaattt atcggtgaaa cacctttaac    1560
accgaaaagt ttcatccttt tccctatttc aattcggcaa atgtgtcacc tgcggagaat    1620
ctcctgtctc gaaccctcgt ttgaaccaat acatcctctg agaggagtgc catgtgcgaa    1680
agcatcaggt accacatagc cctgcgattg tttccaacag gaagatgggc tataccacag    1740
ggcagatggt ggtactccgt agagataacg ggctatcccg tacggctctt cgagctacgc    1800
tgtagagctc agcaggtacg ctctacagcg tagcgagccg agccgtagag ttccgctccg    1860
gggccgtaga ggtggccgag ctgagccgta gagcttggcg cggtgagccc tcagcgtagc    1920
tcgaagagcc gtagagcgca gctcggtacg ctctacggcg agcccgagtc gctgtagggc    1980
gtagctcgac ccccttccgg agtatattcg aacggctata aaacaatgct tatttggttg    2040
gagtaaaaga gtcgcccgct cctttttatg gaagccgggc gaccgattaa agcgatcggt    2100
tggtagacat accgatcgaa aataatcatc tcgttacttt acagcgagtt tctctagtag    2160
gacttgccgt caacgacaac catgactgca tagtggccgc cctgaccgtg taaacaaccg    2220
tgttgcgacc cgctgccaga cgacgaccgt tcattcgtag atcatagctt cgccttggca    2280
agttaccgtg atcgtctttc ctaaactgtc agcgtgtaag gcttctgagc cgttacgtct    2340
gccaacgaag tgtattcaac gtagcagttt cgatagctga ttctccgttc gggtaaacaa    2400
```

```
ctttacaccg tacgtgtaaa aaccggtagc caagtccgga tctcggtaag agtctccgtt      2460
acgcctgatg ctatctgtgt attattacga tagatcgtaa ggtgtaagac ggagcgttcc      2520
ctgaagtgat tacaacatca tcaaggttat ccagaagaag tccgtacagc cgaagtgacg      2580
gaaggcaaca tacttagacc cgcaggcaac tgtaccgtct tttgatacca ggtgccctga      2640
gcacgatacc acgaatggct tcaggtgccg taacaactgt cttggccgtc agcactcttc      2700
caacaaagcg ttggcgaagt tggaagcgtc gttacccgta gaagtgcgta cacggcatag      2760
tgctctgatg cataattggc atcttgt                                         2787
```

(2) INFORMATION FOR SEQ ID NO:740

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 525 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...525

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:740

```
tgaaacgggc tgctacgatg gctatcgcgg atttggcgcg agagactgtc ccgacgaagt      60
actgcgagcc tatggcaata ctcagttgca cttcgggagg actactttat tcccaagccg      120
gtggatcctc gtctgatcgt tcgcgtacta ctgccgtagc acgtgcggca gtcgagagcg      180
gagtggctga gcatccattg cggattgggc tgcttatgag gccgaattgt tgggacgggt      240
gggacgatga gccaccttac gcgtcgtctt catgaatctg ccaagctcaa tcctatcgcg      300
tgatctatgc agcctgcgag aatccttcgg tgctgaaagc tgcgtatcgg cacgtgcaca      360
tggaatagcc cgaccgatca tgttggggga tggaagcaaa ttcgggattt tgccgcagag      420
ttggatttat ctttggaggg ttcgaaatcg ttaattaccc gcttccgatg aaagaaaagg      480
cttcgccgtc ttcattatgc ccgtgtcttt gccgaacaga actgg                     525
```

(2) INFORMATION FOR SEQ ID NO:741

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 453 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature

(B) LOCATION 1...453

          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:741

cgacagaaaa acacacgtat gcccagcagg acaaaagcca gtccgaccac agaagagaag   60
ccaaaaaaat tgtagtcatt tattgctata tttgcggata caaaggtaag attttcttac   120
ccacagagaa gcacaattaa taactcaagt aataacaatg aacattacag atctcaaacc   180
cacaaaagtg tggaagtttt ccacgaaatc actcaagtgc cacgtccttc caagaaagaa   240
gagaaatcct ggcttacctt gtgaaatttg cagaagatcg caacctcaaa tatctacaga   300
cgaggtaggc aatctcgtaa tagagaaacc cggcaacacc cggtacgaaa cacctcgaaa   360
cggtcatcct tcagagccat atgggatatg ggatgccgaa gaagaatgcg ccgataangg   420
ttcatgactt tcgaggaacc gccttattcc cgg   453

(2) INFORMATION FOR SEQ ID NO:742

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 721 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...721

          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:742

tttttcgaat tctgcctcat cgctgttttt attacaccgc aaaagccgtt atggatggaa   60
gtcgtaatta agaatacggg tagtcaagta tcttggtggt tgcacggatg gtacggaagc   120
tatactgcat ggcgaaaggc aatctgctct gaaaggcatc cgctccacca atcccgtaac   180
cgtaggcgat cgcgtgagat tgtccccgct tctcaggacg gacagccggc ctacatcaaa   240
cgaatcatcc ccgacgcaat tatatcatca ggcgagccag caacctctcg aaaggtccca   300
tatactggga gccaatttgg atgctgccgt gctggtctgt acctcaacga tccggtgact   360
accaccgtct ttatcgatcg tttcctcgct acgcagaagc ctatcgcgta ccggttattc   420
ttgtattcaa caaaatagac tctatacgca agaagatcgc ttgcaattgg accggctgtc   480
ggctgtctac ccgccatagg ttacccctgc tgccacgtgt cggcgattac gggcgaaggc   540
tcccggatct caaatcccta ctcgatggca agctgacact ccttgccgcc attcggggt   600
tggcaaaagc tctttgatca atgccctgat tcctcatccg atttgcgcac aggggctata   660
tcccaagccc atcataccgg catgcaacga ccacattttc ccaaatgatc gacttccccg   720
a   721

(2) INFORMATION FOR SEQ ID NO:743

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 502 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...502

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:743

```
gccggccgtt gagaaaagga ctgtcgcggc tcttcgtttc gccccgatcg cctgcttctc      60
gttgctgcgg gagctttctc catacagctg acacgagacg actgacagct acttcacgct     120
acaagctgtc ttcatccgac acttttcggt catcgggaat ccggagccac gcgagggcaa     180
actgcgaatg caggtaaact gacaggaggc tcctccccat cttatatcct gtacatccga     240
cacgagggga atacgagccg gtcgctcgcg gcgatatgct caagcttagg aaatctatgc     300
ccgatcggtc gaagaatggg agcagaaagc tccggcaatg gggggtatat ggcgggcaaa     360
ggactgtccg gcagtctgca tgccaagacc gggatgtaga aatcttgtcg acagccaaag     420
ggccgttctc cctcaggcaa aaggctttgg atctgtcgga tcgcttggct gccacattgt     480
acgaactctc ccttcgctac tg                                               502
```

(2) INFORMATION FOR SEQ ID NO:744

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 349 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...349

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:744

```
ggatggagtg gagcgtaagc tgacggccga ggatctgatg atatgcgatc gaacggcgat      60
cccatgtgtg tggcgggcgt tttcggtggt cttcactcgg tgtaacggaa aagacaacag     120
atatattcct cgagagtgcc aatttcaccc gacgatggta cgccgtacgg ctcgccgatt     180
gggtctcaat acggacgttc tttccgcttt gagcgcggat tggatccgga gcgcacggat     240
tgggcttgcg tcgtgctgct tcgcttatat tagagattgc aggaggccat ctcgtgggat     300
gacagatgtt tattccaatc ctctgaaacc gcacctaatc agttgtctt                 349
```

(2) INFORMATION FOR SEQ ID NO:745

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1062 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

```
       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1062

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:745

ccttggacgg  tcccctcaat  atttgtctca  gaaatggatt  ccttctcgtt  tttctctgtc     60
agtgctaaga  caaagataga  catacgaaac  cataatgcga  taatatctat  gctaatacat    120
tcaatgataa  tcatatccat  gcattagaaa  gccgaaaaat  cacttttccg  gtatcaaaca    180
ggatattgag  atgaaaggct  tttgagcaaa  gggcttcttt  tcggtggagg  aagttttgtt    240
ttcaaaaagg  aaagatcaat  agtgatatat  ataccgatgt  cttactgctt  ccatacccca    300
tataaatgga  aattctattt  atccttattt  tcatgaacac  ataaaaaaga  catggaaaaa    360
ggattcaacg  cctacgtagg  tggaatgtat  ccgtattgaa  taatatatat  ctgcgaggtg    420
agttttccat  gtcgatgaat  gaatgaactt  aagatggctt  atcctacgag  tataaacgag    480
gaaacagccg  tttaagagta  ttcaggcctt  acattagtct  gatgaaaaac  aaggggggtat   540
ccggtttaac  ataggctctt  attttttcctc  ctatagacaa  aaaacatccc  ggaactattg   600
agagagaaat  ctcttttttta tattgagcca  catgcttaat  cgaattagta  atgagtaacc   660
agcatcggtt  aatgctgtct  gtctctaagc  tgtttctcct  tcaaccatcg  attacttttc   720
tcagcagatt  ttggcaaagg  atacaataac  ctccaattac  cctcaaaatt  atcgaaccct   780
tttgaaaaag  gtttaaggga  aacttatcct  atgcctattt  cagcttgttt  aacggctttc   840
gatgtatggc  aatttaagtt  atatcaagga  tagagatacg  caattaccgt  cacaacctca   900
aagggactat  tgatcagtaa  tttttatcaa  gtggaggatg  gagcaataca  ttaagaacaa   960
acgcctattt  gagtaaggga  tcggcaccct  ttcattggac  ataaaatatc  aggtaaatat  1020
acgctcagca  acacaacctg  atgcgtgtag  ataaagaaga  cg                       1062


   (2) INFORMATION FOR SEQ ID NO:746

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 667 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...667

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:746

gccggcaatc  tggccaatct  caaggatata  gagtccaagc  cgaactatct  ttcgtaaagg     60
cggatatttg  caatgccaat  acgctgaaga  aagtctttct  cattatgcca  tcgacggagt    120
cattcatctg  gcggccgaaa  gtcatgtgat  cggtctataa  aagatccttt  agctttttgcc   180
```

```
cgcaccaacg taatgggacg ctgacgctcc tgcaaacggc caaagaggct tggcatgggg      240
aatacaaggc aagcgtttct accacatatc gaccgatgag gtatatggag cattgctttc      300
gacggtacgc tgtttacgga agaaaccaaa tacgacccac atttccctat tcggccagca      360
aggcttccag cgaccatttt gtccgggctt atacgatact ttcggtctgc cgacagtgat      420
ctccaactgc tcgaacaact agggccctat caattcccgg agaaactcat tcctctcttc      480
attaacaata ccggcacaat aagcctctac ccgtctatgg gaaaggggag aacgtccgta      540
ctggctctat gtcgaagacc atgctcgtgc catcgatctg atattccacg gggcaagaat      600
ggcgatacct ataatatcgg tggctttaac gaatggagaa catcgatctc atcaaggtga      660
tgatccg                                                               667
```

(2) INFORMATION FOR SEQ ID NO:747

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 649 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...649

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:747

```
gaagaccgtt gcctgtcgtc gactctacag gatccccaac aagctgacac gcttcccagt      60
cgaggattga ccggtgcacc gtacttaagc accagggccc gccagactga atcaaagagg      120
tgaaatgttc gaagctgtcg cgataatctc tgccgtgccg tatatatcca tatgatcggg      180
atcggcagat gtgatatagc cataaaaggt ttcagatggt ggaatgaacg atcgaattcg      240
tctgctcgac gactactaaa tcacttttgt ccgatagcaa cagattcgat tgatattgtt      300
ggaaattcct cccagaaacg cattgcagtc cacatggctc tgttgagcaa atgtgccagc      360
aaagtagagg tcgtagtctt gccatgtgtt ccgcgacaca gagtgcacgt tccatcagag      420
ttatctcgcc gagaacttct gtcgcttcac cacgcgataa ccattggatc tgaagtaggt      480
caattccgag ggtcggccgg cacagcaggg gtgtaaacga tcaacgaatc ggtgggagaa      540
aaaagctttc gggatcatat tcaggtcatc actgaaatga acctcaatcc tcttgatcaa      600
ttgatcggta atgggactcg gagtcagatc atacccaaca cattaaatc                600
                                                                      649
```

(2) INFORMATION FOR SEQ ID NO:748

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 2241 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:

```
gatcattgca ggccttatca tttatatacg atggaaatat cggtggatct ttcntttgcc    60
accgtcttgt ccacggtctt catgattata aacatagcaa accggatatc cacaacaaga   120
cattgatgcc ggctctcgaa agtccgtctt cgtaccccac gtaatctcct acatctttgc   180
atatgccatg ctggggcggc actgctcgta ggcggctact tcctcttttg caagcgcaaa   240
cacaagaggt gaatgcaaaa gtcatgatgc atacgactga caatctggtc tacagggatt   300
tgcttttttg atgacgggac tgctattagg cgctatttgg gccaacttgc atggggcacc   360
tattggaatt gggatccgaa agaaacatgg gcgcaataac cgtattcagc tacttgctct   420
acatccatca ccggctccat ctcctcgagc ttttgcccat tctttggtat tgctaatcgt   480
cagtttcctt tcctgcaaat ctgctggtat ggggtcaact accttccatc cgctaaagat   540
ccagcattca tacctacaca cgttgaattg cttgcctgca tagattgtaa agatcatggt   600
attgcatttg catatgccga tatagcagaa cctcggcgaa tctcaagcca tagatacaat   660
tccggtctat cttctattca agaggaggaa aaacagcttt tctcggagaa atctcccttg   720
ctttttttggc ttataattgt ttctttgaag tcctaaaatg agacctcttt ccaattcgag   780
actttctttt ggggattcgt cacactactt agtaatatcc ttttcaacaa tgaaaaaacg   840
ctcgtaatag tcgttcaccc cgatttgacc aaatccgtta tcacaaggct tgggccaaag   900
ccatcgaagg tgcagccact atccaccatc ttacgaacag tatccgaacg gacaaatcga   960
tctagcacat gaacaagccc gctggaggct catgaccgca tcgtcttcca attccccctc  1020
tattggtatc agctccctat ctgctgaaga agtggatgga cgaggtcttt actgagggtg  1080
ggcctatggt gccggtggag acaagatgga gggtaaagaa atctgtgagc agtctcctgc  1140
ggatcaccca aatcagcttt tgccgaagga gcacagaatg ccacacgctg cgaagctact  1200
tgaatgtatt cgacgggata gctgcttcct gcgcgctcga ttcaccggct accatgcctg  1260
ctacgattcc tacatcctcg cctgccggaa atgctgccgg ccaactgcga agcctatctc  1320
cgcttatcaa aggagaatga atacagaggt aatagccatc attccggctc gattgcttcc  1380
agccgattcc cgggcaagcc actggccgat atgcttggca atctatgatc caacgggtac  1440
atgagcgaat agtcggtgtc gtcccccggg cgtcgtagcc accgatgacg aacgtatccg  1500
tcaggccgtg gaggacttcg aggagaggtg gtgatgacgt ccccagagtg cagtagtggt  1560
acagaacgtg tcgggaggca ttcgacaaag taggtcgggg agaaaagatc gtcctgatct  1620
gcaaggcgat gaaccttta tccaaaagga acagatcgat ctgctgtttc ggccttcgac  1680
aaaccagaaa ccgatatagc tacgttagca gaagtttctc gtctgacgta agcttcgagc  1740
gtttgaacaa tccaaacagc ccgagatcgt attggatcat ggaggctatg ccctttattt  1800
cagccgctcc gtttcccata tctcaggggg gtacagcctg actcttggtg ccgtcggcat  1860
actactacaa gcatatcggg atctatgcct ttcgcccgac cgtcctccgc agataacctc  1920
actgccacaa agtacggcag agcaagccga aagtctcgaa agcttcgctg gctggaatac  1980
ggctatcgga ttcgagtgct gcaaacacac agagtacgat aggaatcgat acgccggagg  2040
atatggagaa ggccatagct atctccgttc gcagggaatg gaatgacaca tctgcgacat  2100
tatatgtata gaagtatata ggatgagatg attgacgatc tgactcgaga aaggatctcg  2160
atgcggccaa tatcgtagag gtcgtaagcg acttatgttt cgctcgtaag cgtggagtga  2220
actacctcgg cttgggtcct t                                            2241
```

```
     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...822

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:749

cgtgccggtc tgctgactac agaccatggc cccatagaga ctcccatctc atgccggtag    60
gcacggtcgg gagcgtgaag gccgtacaca tgcacgagtg gaagaggata ttcgggctca   120
gattatactc ggcaatactt atcaccttat ctccgtcccg gattggatgt gctcaagcgt   180
gccggaggct tgcacagttc aatagctggg agcggccttt gctcacggat agcggaggtt   240
ttcagtgttc tctttggcgg agaatcggaa gatcacagag gagggtgcga ctttcgttcc   300
catatagacg gctccaagca ccttttttca cccgaaaggg tcaggacatc cagcgcgtta   360
tcggagcgga catcatcatg gctttcgatg aagttgcccc ggtgatgccg accgcgaata   420
tgcacgccgt tcgatgctcc taccggaagg tggttggagc gttgcctgtg tagaatgcgc   480
gagacggagc actctatgga tatgaacagc agctattccc catcgtgcag ggatgcatca   540
tcccgatctg cgccgccggt cggccgagat ggtagctgcc gtcgatgcgc cggaaatgcc   600
atcggaggat tggccgtggg agaaccgacg gaaaagagta cgagatgatc gaactgacca   660
acgagatcct tcccaaagat cgtccggcta cctcatgggg gtaggtactc cgatcaatat   720
attggaagcg atagacgtgg tgtggacatg ttcgactgca tcatgcctac gcgcaacggc   780
cgtatgggca gctctttacc tgcacggacc atcaatatcc ga                     822


(2) INFORMATION FOR SEQ ID NO:750

       (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 454 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: double
           (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
           (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
           (A) NAME/KEY: misc_feature
           (B) LOCATION 1...454

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:750

gggatctcac cacaggggtt ggtggagact gtacggaagc ccagatcgga tagcaatcgg    60
gtaccgattc gcggatgatc gtatcccaga agagtacacg ggttcggccg acttccaagc   120
gttgtggatg attttgcccc agagggtcgc gcatcgatct ctttctccca cttcggttct   180
ttggcatcga tggggtctgt tgtttatagg gtttgccttc gacaacggca cgcatgaatt   240
catcgcgatc ttcaccgata cgttggctcc cgtcaccttg ccttcggtca ttttgcatcg   300
atgaaggatt cngaatcggg atgcttgatg gatacggaca gcaaagtgca ccgcgacggc   360
cgtcttgagc tacttcgcgc gtactgttgg agagcgttcc atgaaaggaa ccagaccggt   420
ggatgtgagg gcggagttct tacgggcgaa cctt                               454


(2) INFORMATION FOR SEQ ID NO:751

       (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 1205 base pairs
```

```
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1205

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:751

gctttaaata ttgcagccga tggaagtttt accatcaaga aagaatttag ttggatggct       60
ttgaaattaa agatacagat gttcttgctt tcgtacacat ccaatgtcca atgcggaaaa      120
ccattctatt atcaatgccg ggcaagaagc cttgataaag cagagcctac agctacagaa      180
caaattgttg ctacccctct gtcaaagcat atgttcagaa tggcaaaatt gttgtagagg      240
aagagattcc aagatggaag tattcaatgc aactggtcaa cttgtcaaaa atgatccctt      300
gtccccggtg tctatgttgt ccgtataacg gcaaacggtg taagtatttc cttaaagtct      360
tggttccttg atttatagag ctaagattta aagaaaactg cgccttctta atgttttata      420
agaaggcgca gttttcgttt tctcattcca ttctccgggt ggtcgtcgaa ggggactgcc      480
tgtcatcttt aaacgaggaa tatcagctcc cctcacacaa cacgatgtcc acaaatccag      540
ttcatagcct atttgagacc tttgaaaaaa gagaaggttt cttatatcat aaaggcacta      600
aaaatcagtc gattgacaat gaaatctcca agaaaatccg tgcgacagtc tcacttatat      660
agatgcggtc aatggtctga tatatcaggc tgttgtggat ggaggatagt acacatagtt      720
ttgcacctga aacaacgttc atactaaact aaaaacaaaa gcattatgac tcctatcctg      780
aacacgtttt ccccgagttc aaactcaatg cctatcacaa tggcgaattc aaataatcac      840
caacgaagac ttgaaaggca agtggtcttt ggtcgttttc tacccggtga cttaaccttt      900
gtatgcccga cggaattgga agacctggcc ataaatatga agaattcaag caacttggag      960
tagaggttta ctcttgcagt gcgataccca cttcgtacac aaggcttggg ccgacgcttc     1020
tcctgctata agaaggtaca gtatcccatg ttggccgatc ccttcggtgc actcactccg     1080
atctggtatc ctgatcgatg atgttcatat ggcttaccgt ggctcttcgt gattaacccc     1140
gaaggcatta tcaaaatcgt agagctgaac gacacacgta tgccgtgatg cagaagagat     1200
cctcc                                                                 1205


(2) INFORMATION FOR SEQ ID NO:752

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1482 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1482
```

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:752

```
agtccgggtt ctttnaagat actgtatctg tatgcgnatn nncagtccta attgcgaaat      60
acacgggatt ctcctgttcg gtaatgacga gcatgaacgg cctcgatcag ctgagatact     120
tctactccat aggctccgat gttttggcag ccgatgctcc cacttggccc ggaatgagag     180
agaggttctc tatacctaat agttattctc cacggcataa gcgacgaagt cgtcccatac     240
cataccgacc ctacacgcaa aagaatgctg tcctgatcct tgtgcagttc ggtgtaccct     300
ttacttcgga atgaagcagt ataccatgaa aattagcgag gaaagcagat tgctcccctc     360
gccaatagtt tgtacgcgac aatcttgaaa gattcgtctt tcaccaaccg atcaatatcg     420
gcgtcgcatg tgtagtcaat caccaatctg tccgggctgc aataccgaat gtattgcgct     480
tggagagtgg tagtcttgtc tgatgtccat tagttagcac gctcaagcag ccatgcatct     540
gaaaattcgg agcatagcgt tccttgacgg cctcacgggc agcgatggct cttcgcgtga     600
agggaagctg gctacgatca cacgtagcat cccctgtcgt tttctgccaa aatagggta     660
taaccttcag attccaagcg ttctttagag aacgagcatt cgttgcattg cggaagctgc     720
ctaccactac actgaccgat ccaatcgaga agcatcttcc ccactgtaag cagagagctt     780
ttctgacgga tttgtacatt ggtagccggt ttagaaacta tcggacgagt ttcatatcct     840
tgtcttcagc ttgggcaatc tcacgttctt tggcctgctc gtagcttggc ggtaggcact     900
ttgcttggat ttgcatgagc cgaatgcaac ctcatagcta tggcggctgc caaaacaacc     960
atcttattca tcttttttc gtttgagtta ttaatactcc catgcgcaaa gatagagttt     1020
tcaatgaaac agccatattc gggatcgact catgcaggcg tacgtcttct cactacgctt     1080
gtggacgttt gtatatgcct ttttcctatc actattttat tggataatag ttggccgaat     1140
cacattgtct ttatctattt cgggagctat tacattctgt cctcaaagat tatatcggat     1200
gtcattaaat gatgcgaggg caatgttttt tattttcttt gcgtagatat caatctcaat     1260
acacactaaa aacatcgatc atggatgtta ttctctcgat tctacccatc gttctcctca     1320
tcgtttgatg cttgggctta ggatggcggg tgacaagagt gctgttctgg cattgtttgt     1380
gcagcattgg tagctttatt cgcagctcct gccctcggat tgcccctaca gattttaccc     1440
ggacaggtgt ccggatgggc ttttgtggga ggtgccctca ag                       1482
```

(2) INFORMATION FOR SEQ ID NO:753

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 465 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...465

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:753

```
gcaggatgca aaaaggaacg tcagtgcggc gaaaaaaatg agctttctgt tgtcatctgt      60
ttttgtctta tgatggactt aacctcgcaa agatagcctt ttctatatat aatgtagttg     120
ccgtgtacag attccagtta taaatgcaca ctaagtcaga tctagtaaga agcgttcgaa     180
ggggtgggct atattcgggc tgaggcattc aaaacagcgt tctatatggg gctgtgtcaa     240
aatccaaaat ggattttcca acaaaaagac acaaatgcca ccttaatcat atcggaaaac     300
cgctatcaag taggatgatt ttgtcctttt ggtagcggtt tcttatacaa attatacaaa     360
tgatagtatc ctttactcta aacggaattt tgcacactct catctatctt ctgtgatcag     420
aagataggca aggaatcggc tgatcggtcg gtaatggtga gggga                     465
```

(2) INFORMATION FOR SEQ ID NO:754

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 563 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...563

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:754

ggcagtggca ctttctccat atttgtcgaa cgcgccctgc gggagacctt cattacaaga   60
aatcgcttcg ttacatccat cgctctctcc ttcccggtag gaatggaaag acatgattcg   120
taaggaactg gcagaaaaca gacctgttat tatgccggtg cagacggatc gatgggacat   180
gctttcgttt gcgatgatac gaaccagacg gaacgttcca cttcaactgg ggatggggtg   240
gcatggtaac ggtaatttct atctcaatct actcaatccg ggttcgcttg cacggcgca   300
ggcgatggag ctactctac tgaccaagag gttgtcatag caagagccc ggccagcaat   360
gaagtccccg gtatcggtac cggatccgac cacacgcttc tatggattgg caacacaata   420
tgtctgatga aagcactttg actgagtgta aaaatcaaga acctactcca catatgcagg   480
gggatgtgaa attggcttat cgcctgacgc ttcccaatgg aacggaaacg actaacccac   540
cgtcaccgtc cctatcgttg gga   563

(2) INFORMATION FOR SEQ ID NO:755

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 515 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...515

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:755

tgcccagtgg acctatattc acgggaatcc cctgcctcag ggattgggtc gggcgctttg   60
tttacgaata atacggatac gcctctttat acggaagggg ttatttgaga tatgccgcag   120
ggaagagatc ttcccgttgc gatgtcgggc cttgttccgg ghaagatatg gaaacggagg   180

```
cttatgaaaa ttctgttgaa gacaggtatt tcggtttgcg ggagatagcc gccggcgcct        240
tgggaatgat gttccgtgga aatccgcatt gcgtgcattc gtatcggaat ggtggattca        300
cgggatttta tagaggtgcg tacttccggc tctacgggta tgccaagctt atccatctgc        360
ctaaaaaagc gatggcggct tcggcacggc tgccaatgct tttttcgaca tatcccggga        420
ttccgtactg atgctctctc tccgctttct tatatagccg gtaaaatgat ggtggtgagg        480
gcattcgaag aggggccgtc tgttgccgga acctc                                   515
```

(2) INFORMATION FOR SEQ ID NO:756

       (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1905 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1905

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:756

```
ccgcgttgan aaaaaggcga acggcatccc ccttgaacta ttgcacaggt gacataaagc         60
gcggtaccat taccttagtg gttccaggcc gtgggcaatc tttccaagaa attgnccgaa        120
ctcgaagtcg gcgactatat cacggattgg taggtccgct gggacagagt acgcatatcg        180
aaaaggtcgg cacagtgttt gtgccggagn cggtgtgggt gtggctcctt tgctcccgat        240
cgtggggctt tccacaaagc aggcaaccgt gtaattgtcg tattggctgc cagactaaag        300
atctggttat ccttgaagaa caaatgcgag ccaatagcga tgagtgatca tcatgacaga        360
cgatgggtct tatgggacga aaggcctcgt aaggatggag tggaaagcgt tatcaaacgg        420
gaaacggtag acctctgcgt tcgatcgggc cggctgtgat gatgaagttc gtttctctcc        480
tgaccaaacg tacgagatac cgaccatagc ttctctcaat acaattatgg tggatggcac        540
ggtatgtgtg gggcttgtcg tataagcgtg ggaggacaga cgaaattctc tgtgtcgatg        600
gccccgaatt cgatgcacac caagtggatt tcgatgaatg atcatgcgtt tgggcgcata        660
ccgagagatg gaataacctt attttcgcct tattgacatg actacagaag aacttatccg        720
actgcgtcgc tctgaccatg gagagaggag ctgcgcaacg cgctcaaaaa taaagaacgc        780
atgtgcgtcc acgggctgaa atgcccgaac tcgaccccct ctatcgtagc tccagatcaa        840
tgaagaggtg aatcgcggtt tgtcccgtga ggccgctatg gcgaagcctc tcgttgtctc        900
gattgtccgc aaccgagctg tatggaagga ttcctgtgag tatcaatatc ccgaccttta        960
tcaagcagat agaagtaggc atatactggc tgcagcatct actttgcgag agacaagctc       1020
tttgccggcg tgtgcggacg tgtctgtccg caagagaagc aatgcgaaag ccggtgcact       1080
atacgaaaat gaacaaaccg gctgttgcca tcggtttctt ggaacgcttg ccgcagacta       1140
cgaacgcgaa cagggcgcac tcaaagttcc cgaaatgctc ctcgcaacgg tatcaaagtg       1200
gctgtgatcg gaagcggtcc ggccgacttt ctttctccgg agacatggcc aagttgggct       1260
atgacgtgac cgtatcgaag ccctgcacga aatcggagga gtgctcaagt acggaattcc       1320
ggatttcgtc ttccgaatag tatagtcgat tcggagatca atcttctcga aggatgggcg       1380
tacgctttga dacgaatacg attgtcggcc gaacgatcgc aacgatgacc tgcatgaagc       1440
aggatttcgc ggtgtattcg taggaagtgg gccggtctgc ccaatttcat gaatatcccg       1500
ggtgaaaacc ttgtaggagc atgtcttcga atgaatacct gacgcgcgtc aatctgatgc       1560
atgcgagcaa gccgacagcg acacacccgt tttcaagggc aagaatgtag cttgtcacgg       1620
gggcggcaat acggccatgg actccgttcg tacggccaaa cgcctcgagc agaacgtgcc       1680
atgatcgtct atcgacgcag cgaagaggaa atgccgcaag attggaagag gtgaagcacg       1740
ccaaggagga aggaatagag ttccgacact gcacaatcct atcgaatata tcggcaatga       1800
acgaggccga gtgctgcgat gcgcctgcaa aagatggagc ttggcgagcc ggatgcaggt       1860
```

ggcgtcgtcg tcctgttgcg atcacggggg ctatcgagga gatcc

(2) INFORMATION FOR SEQ ID NO:757

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 843 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...843

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:757

```
gccatgcttc gtgccacgac acaggaggag cttttcgctc ttatggacgg gtggagaaga    60
tgataggatc ggctgattca gcggcggtat agtcgcttga caaagctccc cctgccgatt   120
gcttcaatcc acaggtctcc gcatgcaatc cgtcaactcg gcatcatgtt tgccggtgaa   180
catctcgttg tggcatcgca tagcaaccag agcagatgat cgaaggcggt cagctgttcg   240
tccgaagggc ggaaacgagt gtctcggcac aaaggcgcag gttgggaaag agatgaccag   300
tacctttctt ccctcagggg taatggagac acgcatactt ctggatcctc ctcatccggt   360
ctctgctcga tcagattagc tttcagcaga cgcgcatgac ttctgcgccg gatgtttttt   420
ccatggcatt gaggttgttc actctgtctt ggtcatgctc tcaccgttca tcaggctgac   480
cagataggta attcgtcttc ggtctgtaat ggagattccg tcagagcttt cttgatataa   540
aacgggaata acgatggagg aggctgaccc ctcgcgctat gttcttagtc ctgctgctcg   600
ttcccgggtg acagagacaa cttcttcctc ctgtttctct ttttgccaca gcgccaactt   660
aaaaagtcgg caaagtcttt tatttcggtt cgtgcgagcc tccgtcgtgc aaactttcaa   720
atgcatcgag gtagtaataa gatcgaaaag cagttttttg tacttcataa attactccga   780
ttgataaatc gtccgttcga tgtaatcctt ttgaagcata aatgtacatt tttcactgaa   840
aag                                                                 843
```

(2) INFORMATION FOR SEQ ID NO:758

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1068 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature

(B) LOCATION 1...1068

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:758

```
gccattctct cggctacgat cattatactc tataccctct atgccacagc ggcgaagtca      60
tatcgaggaa tggcccgtat ctgtacgtat ctgtctttcc gttgccaccg gactttttcca     120
ttatctgaga cacgtgatag tgaaaggtgt cattgcaatc cgaccgatat gctctatcag     180
gaccacgggc tccagcttcg gtagttgtgt ggatcattct ttattcgata agcccttatg     240
tcgcaaggcc catagccata ttcgatttcg acggtacgct gacccgatgc gatttttgct     300
tccctttctg cggcaagccc agccggttat tctctttttgg ctcgactgcc tttctatctg     360
gccatgtgga tgtgctacaa acttcggctg gcccggccga ccggacgaaa gcagccatcc     420
tttccacagt cttgaaagga aaagggaggt ggaatgccgg gcaatgggac agcgattcgt     480
gcctgctatc aaagcattct tcgtcccgaa gcccttcgct gtttggaatg gcatcgcagg     540
aaggacatcg gctggtgcta ctgacagcct cgcttctgcc ttgtgtgggc catgggctga     600
aaagacgggg tttcataccg tcattgctac ccttccgaga taaaatccgg cattctgacg     660
ggtcggttcg aaggcaataa ctgcaaggaa aagagaaaat ccacaggttg gatcgagcct     720
tgccgcattg gcgagttcga tctcctatgg ctatggcgat agcccctccg accgccccctt     780
gcttgcctct gcacacattc ctactataga agattccctg ctctatagcc tgcgccgcgt     840
ccgtatcgtt tggagattgt cgattcatcg gtgtcccgat ggtacccatt ttcctacccg     900
accataaacc gccatcagag cagaaaaaag cctcttctgg atttccacat aaacgactgc     960
aatgcaacgg tttgtgattt tcagttttac acataaattt tcccggcctg gaaaaaatat    1020
tttccaggtg ggaaaacatc ttttccacgg gtggaaaata ttctttttc                1068
```

(2) INFORMATION FOR SEQ ID NO:759

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 912 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...912

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:759

```
gccagatgat agatttattt cagatcgata caggatcttc tctgcttctc cattcgcaga      60
tgaaggtatt cgcgcgggat ttccctctcc tgcacaggct atatggatat tgccattgac     120
ctgaatcatg agttgataac tcacccaaca gcacgttcta cggaagggta aagggcaatt     180
caatggaaga cgcccagtgt tcgacggcga tattcttgtt atagacaagt cccttgaagc     240
gcgggtggcg atatggctgt ctgctttttg gatggagaat ttaccctgaa aacatccgca     300
tcaaatcgga agagattcta ctcgaaccgg ccaaccccga ctacctacca tacatgtatc     360
ggcagacaac gatttcgtca tctgggggat cgaacctatt gtattcataa aataagaaga     420
tgatcggcct atgtatgccc tttagactgc aacaacttct tcgtcagttg cgaaagggtg     480
ttcgacccct gctccgaaac aggccggtcg ttgtcctctc caataacgat ggttgtatct     540
cgctcgcagc aatgaagcca aagcattggg gatagggatg ggacaacctt cttcaaggtg     600
caggacttga ttcgccggca caatgtggca ttcttcactc gaacttcatt ctctacggcg     660
atatgtcccg acgaatcatg tcgctttatc ggaacttgta cctcggatgt cgatctattc     720
gatagacgag tgtttatgga tttgagagga gtgaaagata tatgtcgtat gccacatgat     780
agtcatagag tccgccatgt acggtatacc gtgagtatag gtgtagccga tacatgaccc     840
tgtccaagtg gcatacaaat atgccagagt atgcggttac agcgtatgcg catagactcg     900
```

(2) INFORMATION FOR SEQ ID NO:760

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 617 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...617

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:760

```
tggggaacga attgaacacg ccggcgagga gcgaattgaa gccatcggca atactccgcc    60
cgatacacgc ttgatgtatt tatcaccctc caccggttgc ccgaaatcat cgaattggcc   120
gtaatatccc ccgttgcttc gatggcttaa taagatagat caaccctatg gcgataaagg   180
aagacagatt caggctaggc cgtatttgaa tggaacaggg atattcagca gtgcgatctt   240
cgtcgctcca taccggagag atccactcga ccgaggatgt aagccaaaac ataacgacga   300
gcagaccgag tacgatggag ctcatacgaa tgtatttgtt tttctcttat tgaagaagag   360
gacgcttacc aagacgagag cagcaatgct gaattctgcc agttgccgaa agtcccgtcg   420
ctcatcgccg cattgcctcc tcgcatgaga taatccccac tttgatcaga ctcagaccga   480
tcagcaagac acgattcccg aaacgagagg cgtaatgatc tgcttgagat aacggaagga   540
ccggcttgac gatcatctct accggagctg ccgctatcgt acaaccgata taagtggcag   600
gcccgccggc caggccc                                                  617
```

(2) INFORMATION FOR SEQ ID NO:761

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 510 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...510

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:761

```
gcagcatcct tcgttccttt ttcctacgga tgcagcagaa gttcttcggc aagtgcaaca    60
aagagtctgc atccatgcca cagtctgcat actgttcggc acagatccct gcccgataaa   120
gcgatcgggg actcccaccc gtcggatcgt gggtggtagt catggtctgc cataaactcc   180
atgacggccg atccgaaccg ccttggatgc aaccatcttc gacggagatg atcgtatcaa   240
acttcttgcg atgccatgga gcatntcctc gtcaagcggt ttgaggaata ccattcgtag   300
tgggctgcag atacaccttt ctcagccagc cgttccacca cttctgtacc atattgccta   360
tggggcctat ggagaggaag gctatagctt cgcctccgtc agacagcgtc ctcgcgctat   420
ttcgaccagt cgcggagtgt tcgccagtcg gtcaagcacc ctttgccacg cgggtaacgg   480
atcaccattg gccgtcatat nccttgnatg                                   510
```

(2) INFORMATION FOR SEQ ID NO:762

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1414 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1414

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:762

```
gggaaaagat gcaagggatg ataccccaga tcaggcacgg ttgacatcct gatcaaaaag    60
ctcggnaagc gggtcatngc aagccattcc gatgaagcac ccacttcgat catatcgggc   120
aacatcttat gctcacagcc atgtaagtct gtactccttc gatacgaagc agattagagc   180
cgacaccctc tatatggccc ccatactaag cagcatcttg caaagttgct gcagatatgg   240
ctcacggcag cattataaat agtggtaata ccatcagcaa ggacagctgc cattggatat   300
tggcagtacc cgtcacagaa gcttcgtcca gcagcatata agtccggaaa gccggcttgc   360
agtcaattca taggcttgca tatcggaatg gtgtcgcacg tggcacntaa tgcctgaata   420
cctacaagat gagtatctaa ctgtggcggc cgatcttatc tccccctggt ttcgggaaaa   480
tggcgtaacc aagcgactga tcagtggccc aacaagcaag accgaaccgc gcaaggcgca   540
ctcttttcga gaaactgctc gctttttgata tagtcgagat tcacattaca gcttggaaaa   600
cacaagtatc gcgggtgggt cttttttacct taaccccatg tttcgaagca ggtcgatcag   660
gttgttcaca tccaatatat cggggagtta cgcaccacaa cctcctgatc ggtcaatagc   720
gtagcagaga tgatcgcaaa gcttcgtttt ttgcaccctg gacgagaatc tcacccttga   780
gactttgccc ccttctatta cgtaagatgc catagagata atgtgtttta tattctgtat   840
gattatttcc gccggaatac cttgttccgt ttggtgttgt tatgtccttc cgatccgaag   900
cattcggtat cgtcagatga caactctcct cgtcagctct atgcgccctt cggacagttc   960
gtacaaatcc ttgaatatct gtagtcatcc accgtatctt tgttccatgt cagatacgaa  1020
cgcttcatcg gttggcgatg agcagctcca gcgcataacg ctcttctccc tgctccatgc  1080
acaagccttg aggatcattt cctgtatgag atggccgtag tgccgattac gatgtcgttg  1140
gccgagtagc ttacagcttt aggcttccgt tcgagcgctc cggactgatg atctccatcg  1200
gaataatcga tatccaactt gaatcggaca taatagccag atgatcccaa agaatatgct  1260
tggtctcact gtttcccgcc gttcgggaaa catgtttccc atgattgtaa tgatcgtttg  1320
tgccagcgat tccgttcgtc acgatcaccg attgtcatgc aataatttac cagttttgga  1380
tattcctgcc atattccgga atagccaaag gttc                              1414
```

(2) INFORMATION FOR SEQ ID NO:763

```
       (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 840 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: double
           (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
           (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
           (A) NAME/KEY: misc_feature
           (B) LOCATION 1...840

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:763

tacatacggc gctgaccntc gatcgtaggc tcgaaatttt cgaggncgat gtgcgaaaag    60
cctccacgtc accatcctct gcacgccata aagccgctct tgtgaagtgc cacggtcggc   120
tcggaaatga acctccttgc catagcgtgc accaatagat ctgtcagttc actgagcatt   180
tcctgccgaa aggaggcata cgtttttgca tcgggtttat attttgaggt ttcaccgttt   240
gagcttcgtg tttacttggg caaatgccgt gtatcctccc accggaagca aagcagcgac   300
catgccaacg ccagcgatag ctgtttttctc ttcttcatat tatactattg aatttagaat   360
gaatctctcc aaatgtaacg acaatcgagg agtaggatat aaattttgaa taaaaagcag   420
ctatagagtc acgcagtagc gttgtggaaa taaaaagaga cgtacctccg gaggggagat   480
acgtctctgc ttttcgtttt tgtatctgct ctgtatgagc aggggagtga aatcagggat   540
agcaaacgcc ctgagctacc atagccttgg caaccttcat gaagccggga tattggcacc   600
cttcacatag tcgatgtagt tgccgtcttt accgtattaa cgcactgctc gtggatgtct   660
tgcatgatct ggtgcagcca cttgtcactt cttcattcgt ccaaacgagg tgcatagcgt   720
tctgcgtcat ttcgaacctg agcaagaaac accacctgca ttaacagcct tacccggagc   780
gaaggcatct tggtttgctt acatagtatt cgctggcttt cggccgacaa ccctgttaga
840


(2) INFORMATION FOR SEQ ID NO:764

       (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 1943 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: double
           (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
           (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
           (A) NAME/KEY: misc_feature
           (B) LOCATION 1...1943

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:764

cctcattttg aagaaagcgg gcaagcttcc aatggcctgc actctgtctn gacgggcttc    60
```

```
gnagaccttt ctctttgtgc cngaacagga catcgcagat ggcgtacatg tgcacgatgc      120
cattgatagc aagcgcacga tgatcgtgtg tgtatggctc ttttgccggc cctgctcttc      180
ggtatgtata atgtggggta caacattata tggccatcga tgctcccgta gtattttggc      240
cggctttctc ttcggacttc tcgccgtact gcccaaactc attgtctcct atgcgtcggt      300
ttggggatag agtttgccgt agctcagtac cggaaggaag aaatcaggaa ggcttcctcg      360
tatcgggtct gcttatcccg atgatcgtgc cgtagatact ccgctgtgga tgatcgccgt      420
ggcgacggct tttgccgtgg ttttgccaag gaggtgttcg gcggtacggg acgcaatata      480
ttcaacgtgg tctcgtgacg cgtgccttcc tctttttcgc ctatccggcg gctatgagtg      540
cgatcaggtt tttgtccgca cggctgatac cttcggcctc ggcgcaggac ggtagcggac      600
ggcttctccg gagctacacc tttggggcag atagccaggc cggtgccaag atgcctgaaa      660
tacataatgt ggcaggcgac ccctctccct gatggatgct ttcctcggct ttatacccgg      720
ctccatcggt gaaactctac tctggctatc ctgatcggag ctggccctgc tgatttggac      780
ggggtcgcga gctggaagat catgttgagc ggtttggtag gagcctcagc aatgctctcg      840
tattcaatgc catcggcacg acggcggcga tgcagatcac tcgctgatgc acattgtcta      900
tggaggcttt gctttttggc tggtatttat gccaccgacc ctgttacttc tgcccgtaca      960
gaaaagggga aatggatctt ggtttcttcg tcggtctgat ggctgtattc atccgagtgc     1020
tcaatccggt taccctgaag ggatgatgct tgcgatcctg ctcatgaacg tatttgctcg     1080
ctgatcgact atttcgtggt ggatagcaac atcaaagcgc gcaaagccgt atgctcaaga     1140
aatcctaacc gctaaatatt tcgataaaga catgaaagag ataaaaactc gtacaccatt     1200
ctctatgcct cggtgatggt tattgcgtgg cggttttgct ggcttacgtc tctcagtcat     1260
tgggcgacag gcaggtgaca acgagaagat agacaagatg cagcagatcc tccgctctgt     1320
gaagccggaa tagaagataa gggcaaagta atagctcggt acacggacgt gacaagcaag     1380
aactgctcat caatcaggat ggtacggtag ccaagacctt cagggcgagc agttggcaca     1440
aaatgaagca ttcacgctca atacgcgcaa gctttcaaat cggccgctaa tgatccaagc     1500
atttcgctcc ctctctatac gcagagatag agggtcagaa gaaatacatt gtcccgatga     1560
acggtgccgt ctttgggggc cgatctgggg atacattgca ctgaacgaag actgcaaacg     1620
atattcggtg cagatttcag tcacgaaggc gaaacgccgg gattggagcc gaaatcactc     1680
gctcggagtt ttccggtcag tttatcggca aagaatcttc aaagagggcg aattccgatc     1740
tgttgccgta gtcaagaaag gccaaaagcc gaaggaaagg actatgtgga tggcatttcg     1800
ggcggtacgc tgagagcgat ggagtgaatg agatgctcat atcctctctc cgtccttatg     1860
cttataccta atgaacaacg taaaaaaata agggctatgt cactttggaa taaaagaata     1920
aggaaattct tctcgggccg cta                                            1943
```

(2) INFORMATION FOR SEQ ID NO:765

     (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 978 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...978

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:765

```
taaaagatta ggtacttttc aagaaaacca tcaagtactt tcacaaaaaa ttaggtactt       60
tttattggat tatcaggtac ttttgaaaat agatttatat atttgtagat gtatttaaga      120
aaacgccttt cagaggattt ctccgacttg ggaaggttta tcaagtggag actaaaacgt      180
atgtaataat ggcaagaaac cattgcaatt tgtggtcgta gagcgaaaac tgaatgtggg      240
taaaacgcag gtaaagtaat gcagatagca agaccgacgg ggagacatcg tgtaactttc      300
```

```
gctccttttg cgaacgtgta tccaagtcca ccacattcaa ccgcaagaag tcgaggctgt      360
attgaactat gctacagaga ttgccaaaga catgtatcga acggcgacat cgtggagttt      420
ggagaccttg gcacactaat gcttctttca aaagtaaggc ggtagaacag ggggtaaagt      480
tcaatgctaa gttcacatcg aaaagcctgt tgtcttgttc caaccttcca aaaagtactt      540
actctcaccg atgtaagcta tgaacagaca actgccaggc caaagaaaga acaaaacctg      600
ctccaaagcc tgataccgga agtgggggga atagcgggag ggcatataag aattagataa      660
gcccacactt aacctttcag aagttttaaa accagaatag agagtttgct ttgccttgga      720
gcaaactctt tcttttagac ttttctgaat cttgattagc ccctttgtt catcatcttt       780
gaggggcttt tgatggtgtc ggtctcaacg tcttttagtg catcggcaaa aacagtttga      840
gggaaagagc catctcgtct tgtttgccga cacagaaatg ctccaaatat tccaaccgaa      900
atgatacagg tctaaagaga tatgaaagcc ttttgtctat cactatacaa actccgtttg      960
aatcatcagc atagtaag                                                    978
```

(2) INFORMATION FOR SEQ ID NO:766

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 800 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...800

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:766

```
gaaaacgaaa tcgactttcg acgaaacgac cttcaattca tctccttcct actcgtgtgc       60
aatgtagggc ctgtagcacg gtaggcagtt ctctctgctc gatcggaagt cggaattgat      120
cgtgagcaat ctcataccct ataggaacag cggctctgcc tgtagagtct gtacgctgaa      180
gtcaacgaag tattcctacc ggcagtcggc ctcagcccgt ctacgggtac aataatgtcc      240
gatgagtctg aggatcgata tctaagccga tgaccttgct ttgcaatgct ttgcattagc      300
cgaaaccgta tagcgcaggc ggtatttctt gaggttggtg aagagaaccg attcgtgata      360
cggaaatgtc ccttggcggc atccactgct tcaagccgac gttttgatgc acatacttca      420
cctcctgcat ggcagggtga gcgtgcggtc gggattgacc agtccgttgc aaaggaagtt      480
gccgtcactc gtgcatccac tccgaagtct cctccataag cccaatagga ctttcctttt      540
cgtctgtacg gaggataccc tgatccaccc agtcccagat gaagccgctt gcaggttggg      600
gtacttgtag atagcctgcc actgccccca taggttgcgg tcgaattgcc catggcgtga      660
gcgtattccg aagggatcac agggcgtcgc taccggcccg tccgatacct tccaaccatt      720
tcgcatcggg atattgggta catacatatc cggattccac tcccattggg cacgttcgta      780
gttcccgggc gcgccatcag                                                  800
```

(2) INFORMATION FOR SEQ ID NO:767

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 464 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...464

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:767

```
tattctttgc tcctgagaga gggctggttt ctatcctaag tcgctacaat tcactatcga        60
ggagaactca cccgaggagc aacaagtggc actagaccag agctactcgg caaggtcttt       120
gagaatctcc tcggagcata caaccccaga ctcaggagac tgctcgcaac cagagtggct       180
cgttctatac tcctcggagg ttgtcaacta tatggtggat gagagcctga tttcttattt       240
aggagtagcg atctggtgcg ctctctgttt agaccagatt tcgtactgca ggagacaaca       300
aagtgcaatg cgaagctatt gcaagcaaac tcaaagcagt caaatactag accctgcttg       360
tggctcggga gcattcccaa tgggattgct cataggatga ttgagctact tgagcgcata       420
tctccccaag agaaaagcta tatctcaagc tctttgtgat cgag                         464
```

(2) INFORMATION FOR SEQ ID NO:768

        (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 1007 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1007

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:768

```
agcggagatc cgcgtcctct tcgatcctgt cggtcgatca ggagctttct caagcggatt        60
cgggttttct ccaacgcgca atcttcaccg ctggaactag tataagcggc acggttacga       120
ccctcagtgg tgccataccg catgccttgt cttggcgata gggccgctac aggtgagcaa       180
tgctcgcctg ctttttcctat ttccatgcct gaagatgagg gggtggtacg gttggtggtg      240
aacaaacgga tgagtccgac ctgcaagttg ctgtcgtatc gctaccttca tttgatcgct       300
ggacgatcgg gcattccggc tgcaagctcg tgagcccaga gagtgaatct ttcgcttgcc       360
gtacctcgca atatgcctcc ggggatgaag gagagcctct cgttttggag gtaacctctc       420
ccgaaacagg aaaaaaagcc gtgattccgt catggtctcc ttgccgctgg tggacaattt       480
ccctgccctc ctgcagccca acaggcgtt atggaactca gcaccattt ggacatgggc          540
agttggatgg agagacgaca aaggctgcga tagagattcg caacgtcgtg ccggccctct       600
ccgattgcat agcgtcacca cacgcaatcc ggctttgctg ccgtacccga ccggacggag       660
ataaagcccg gcggaagcac actattcgga tcgctgtgga tccgcaggtg atgaaggctg       720
aggggtggca gagtaagctg ccgatatttc cattatttgc aacgatccgc aggctccgct       780
acgtgtatca aggtcaaagc cgaactgtag cttttccccg tagagctgct gccagcggta       840
ctgcaagcga gattgcccgc agatctgata aacagaacat tactatggac gaactacttc       900
```

```
atcatcccga aaatgatgat tgctataagg gctgaaagtg aacaaaggcg tttccaatat        960
gcccatcatc aatccctacc gaataggaca agacgcaaga agcttga                     1007


(2) INFORMATION FOR SEQ ID NO:769

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 2523 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...2523

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:769

gcaaaatcga aaggaacttg acgttcgcga tagtcgagag cagctctgaa aagtgcgaca         60
ggacggaatc aggaagatgg agacgataga tacctgcagc cgcgaatgtg caaggaatga        120
cgaaagggat tccaaggcga ctcctcctgt ccactgctcg gatcttcttc ggtatggact        180
accgagcaac tatccgaccg gcataaagaa cgatgccgat atggctatat tcttgtgccg        240
aagagccttt ttcctgaaaa gaccggaata ccacgaagtg cctaagcgac agataggtcg        300
ccatcgcgca attccgttcc ttcggggaag gcaggtacaa aaacctttct ttcctgccct        360
gcgagcatgc actcagacag agcagaaaag aagggagaga atgcaccggg taacgaatgc        420
attaagacgc aaaactgtaa accgaaggga tgcttatttc ccgatcgctt catcgacaag        480
ccatttgttg cgatattcac cacatgaacc gtggttgtat catcttcgaa atccagatag        540
tgacccaagc ttccttctcc acaatactat ccttgataaa ggtaaactgt agtttggttt        600
ggcctctccg cccaaagcac catacagatc gacaagctat tggtgcgttc cgtgcaatac        660
ttcttagcct cttcatattt ctgtttgcca tgttctccga gaagttcttt acagcatctt        720
tcgggccgga cgatgacagc cggccatcaa ggcagcggca aacaatgccg ctccgatttt        780
ccattttttca tattagaatt tttacttttt aagtatcagt tgcttagcaa agaagcgaat        840
atccctatct cctcattcgt gcaggtgaca ataatcgtcc gaaaaggccg aaaggagaga        900
caaggccagt aaaatgtgga gccggaatca gagaaacatg gttccaaaaa atctgaaaaa        960
tcgaaccaaa acaaaaactt tacgttcggg aatttttttc ttttggcgcg agttccaaaa       1020
aattcccgac catgttttta gggatgtgtt ttgattgttt ttcggcgcat gaaaagaaaa       1080
atggtcagct tccccccttcc tcttcgctct ttttcatttc ccccaagtac aacagggggc       1140
gcagagtttt cggatcggac ggattcgatc gggaacaaat ccggccgatt ctgtttaacc       1200
atatgagacg aaaacctgtc gaatgtgcca atatgcaatc atgaatgtac ccttttgaaca      1260
gaatcatcaa cttaaaacag tcaattatga agacaaaaag acttttttcta ctggcgatca     1320
ttgactatgc agcattcatg catcaatggg gcttgacctc caaaaacgag taaagggaat       1380
gagcaattcg cctctgaaga gcgtttggca gagcctttca cgcctttcgg catcaggcag       1440
cattgatatt cagatcgaat actccccata aggcacccct ccgaatagaa gccgagtcga       1500
acatcatacc actaatcaaa caacggtaaa gaaaggtgtc ctgaacatcg aattcgaaaa       1560
aaaacgttca tatcgcctaa tgctgcagtg cgagttatcg tcagtgtgcc ggaaataaat       1620
cagtcacact gggcggtagt ggcaatttga ttttcggttc cggtttaacc agcccaccct       1680
gaaagtaacc attaacggta gcggcagtat aaactcatcg atacaaaagc ggaacaactg       1740
gacatcgtag tcaatggtag cggtaccttc gcggcagcat ttttgctcat aaggatatac       1800
gcatgaacct gaaggatccg gcaatatcac tctttccata gacgaaacca agacgattca       1860
agtaatatga aaggaagtgg aggtattaag ctgacaggaa aagcttcgaa ccgatactga       1920
gaagttcggg aagcgggatg ttcgactgcc aaagcctgac actgaccatg ccgacataaa       1980
aatgagcgga agcggaggcg gccgcctcat gtaacgaaga aaatcagcgt caatctatca       2040
ggatccgccg gtttcaccgc catggaaagg ctaaaatagg ttcttataaa ataggacgct       2100
```

```
cttcttcttc agtatgcaac cgtaagcggt tccacatctt aagccaataa atacttcctt    2160
tttcgtaaac gaagaaaaga cagaagaacc gagaagagtc gagttcagct tttgcttccc    2220
gactcttctt ttttagctct caatgcgatt gaacgaggag tgatttccct ctttcgaacg    2280
taatgttttt gcgcccattc gagtagagag ttcgagaaaa aacggtttga gatgtaacat    2340
ttcgggggct tgccgtctta ctgatagaac gactaacaag aaaccaatca atcatgtgga    2400
caaaagactc cttttcctcg tgctcgcggc agcaagtatc agttttgcat tgcccaaata    2460
atctcatgga aacgcatcaa gggtaacggt aaagttcagc agaagagcgg cgtataggtc    2520
aat                                                                  2523
```

(2) INFORMATION FOR SEQ ID NO:770

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 513 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...513

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:770

```
gttacgtaga cttgggatta aaatgtgcct gcccctgcag atggatcgat cgaatatctg     60
gcacgaggcc ctcatgagaa ttatgtggat cgtaggcaag tgctttcttc ggactgtatt    120
ccgaccgtgt gagccgtatg gtcgaaccta tgtacgcccc cagagtacgg gcaatagaac    180
cggccttaga gctctgccct gacggatgat tccggcaggg gtatcagggt ggaagcttcg    240
ggacagtcga tttctccatt cttccctatg aggacgaaca tcttgcgcgg actctcatca    300
atgggaatta cccatgcctg cgcatcatat cttgcgcttc gacatatgca gcgcggactg    360
ggcaatggaa gttgcgggcc cggtactgct ccacatacct ttgcccctca tcgggcactt    420
attccttcga acttcgtttt ctcctctctg aatgtgtccg cagctacttc gaatgcgaag    480
agaacgggac ttaattctct ttcggtgaag ccc                                 513
```

(2) INFORMATION FOR SEQ ID NO:771

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 808 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:

```
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...808

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:771


agacaggatg cattcatgcc tgagatctct tgagcagtcg gattcgtgac gctgcccacg      60
agagcaaaat cgttagaaat gctctaaaaa caatactttc atcatgatag ccattatttg     120
attcgtaatt tttccgtatc tataatttct gatcaacatt tagcgttacc aggtagaaac     180
cgggatcaaa gttggagtat tgaactgtat gctgtaataa ccttcggata gatgtttggg     240
caaccggtta tatcagccga ggctccattt attccatata tttttattac agaaaggaag     300
ggttatcggt atagtagatt attgttacaa cagctttcgc cggttgggcg aaatagagat     360
tatcttggat ttatcaaggc ttgatttgtt gcttctaatg gaggcaggag agtacctgtt     420
gattcgggaa gagttgacaa caataatttt ttacattttg atggctttcg agcgatttcc     480
tttgttcaca gaaagtatgt tcaaatctat accagtccct ctgagtgagt ctaactgcaa     540
ttccaataaa tgtcaccaag gtcaatgact gcaaaaacac tgtcctgaag gagatttcac     600
tattcaagcg attttcgtac caatcgatgg cagactgtag ttttcacaca caatatcgca     660
tcgcgcagac aggaaatcag ctgtcgggaa caagttctgg gaagagatga tggttggatt     720
ggatctgaaa taatcttcaa gccttcgtaa tcgntgcctg acattttctc tatcctgaac     780
aattcttcaa agcagctatt gcaaaagt                                        808



(2) INFORMATION FOR SEQ ID NO:772


     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 643 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular


    (ii) MOLECULE TYPE: DNA (genomic)


   (iii) HYPOTHETICAL: NO


    (iv) ANTI-SENSE: UNKNOWN


    (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS


    (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...643


     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:772


ggacttacga gaagtttctg tccgagggtc ggcatgggga aatggactac tggagcgcaa      60
cagggagctt cgctattcgc cggcagagct gttgccggta ctcgtacggn tatctccgtg     120
gcactgaact attaccccaa gatcaaaaac cggcctcggc tccacaaata gcttactatg     180
cttatggaaa agactacaca aggtcgtcaa acgcctcttg acaagctac tggattatat      240
tcgtcggagg tctgcccctc cgtctcggga cggtctttca gcgactctgc tcctttgccg     300
aacgctattg ggcttgccgt gcaggtatcg gctgggtagg gcgagcggca tgctcatttt     360
gccccgaggg ggaactttct ttttcttggg aggctattgg tggatatcga tctgcctccc     420
gatgctccga tgccatcgcg cgtggagctt gccggaactg tatcgagagt tgtcccacgg     480
gagctatttc gaagaaggca tggactctcg tctctgtgtg agctatctga cgatagagct     540
gagggggaga tccctccgga actggtcggt aaagctgggc aaccgtttta cggatgcgac     600
aagttgccag cttctgctgn ccttggaacc gatatgccat nca                       643



(2) INFORMATION FOR SEQ ID NO:773


     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 495 base pairs
          (B) TYPE: nucleic acid
```

```
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...495

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:773

aaaagagact aaaaattttc aaacgcaatc gccctgacca tctgtccgaa tgggatccat        60
ggtattatat cgtcttcctc ctcattggta ttgttggcgc tactgtgtac cgacgcggta       120
gccggatgga ttattggagc cggaggagta tcggctcgta tggacgcaat gtgaatcaga       180
cgccacagcg tggcaccaaa gtgcatacac gggtagcgaa gcgatggttg gaggagcaca       240
agtgcgttgc cggtcatgtc gttgaatgtc tcaaaggggc actcattaaa gggggtaaat       300
ttccactagt ggaaaaagaa gtttccactg gtggaaagtt tatttccacg ggaggaaaga       360
tatctttcca ctggtggaaa accggcgtgt acaaatagtc gcctgacaca caataagaag       420
aataaacaaa agcgcctgct tttgtgcaaa gggcccatta attcgaactt gttaataacc       480
gaacgtagca tcggt                                                        495


(2) INFORMATION FOR SEQ ID NO:774

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 457 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...457

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:774

cgctctatga tcccgaagaa ttttacaatc agacgatgat ccatagtcgc ggatggaaga        60
gctgttcggt gtaaaacccc gagtgctgcg caatacaggt tgatcttctc cgacaacatt       120
gccacccaag tggcagaaat gggtttttaag ggatgctcac ggaaggagcc aaacacatac      180
tcggatggaa gagtccaact atctgtacaa agccggatcc gctccggagt tgtccctctt       240
gctcccaatc cgaggctgag cgatgccatc agtgccatgt tcacccgcta cgatggaacg       300
aatatcccct gacggcagac aagatgatcc gttggatcga agaactcccg aagaggagca       360
gatattcaat ctcttcatga actacgaagt ctgggatcgc tccatccgag gagtcgggta       420
ttttcgattt ctttcgtgca ccccttcttt ggcgaaa                                457
```

(2) INFORMATION FOR SEQ ID NO:775

     (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 1393 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...1393

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:775

```
cgttttctat accgggtata atggcacaca agccacgacg tttggcctcc gtacctcctc    60
cggattagtc gcctgcatca ggctctcggg atgcgagaca cttgggagcg aatagcttcc   120
agcttacctg tggcatagtc cgtggccgct tcagagaagc atcgtctcgc tcaccttgcg   180
gcagatatgc taccatacac acgcatcgac aagcccctct cgcatcttcg gagcatcgac   240
cagtgatttc ctcttttcgt aaaatcaaat tccggacaga agtgcatggg cgtgccacat   300
gcgaatccag cacaattacg gagcggtgta ccgctttggc ttggcaaaga gagaagcctc   360
ggcgaccaaa tgctcgaaca attgctgctg acggtgtcac cggcataggc catttgctcc   420
ggatgccatt gtaccgacag gtaggtttct ccggataggc ttccatagcc tcgataacgc   480
catcggaaga agggctgtca cgcggaaagg tttcggcact ctgctgactg cctgatgatc   540
aggctattga cacccagcag ctcgccatcg cttaggccaa gtattcgtcc aagacggaat   600
cgccctgtaa acggacttgg tgtgccgcaa acgatatggg attttcggat taagccctac   660
cggattttcc gactgggcat atatatctga tacattcctc cgccgaaagc tgtcgcaagg   720
agttgatgcc cccggaaata ccgaggatcg gcacattgcg gcgagtggct tctgccacca   780
atagagttcg ccccgatctc gctcgggatt gacttcgccc agtgtgggaa tgggtcttct   840
cccaaatagg acgggagtaa atcgtcccca ccggaaagaa tcgcccatcg atgaacgtgg   900
cataatgacg tatgacctct atatccgtag taaagggata agtaagggta aacctcccgc   960
acgtattaca gactcggtat ggctctggca atacacgagc ccgaggtatt ataattcgct  1020
gtcaaaccat aacaggtcga gagggagact ctcctccctc aaaagcttgc ggcgcacctc  1080
aagctcttca tagagctgtc ggagcgccgc aggataatac tgatagtctt aggactaagc  1140
atctattctt gcataagtag cattttcttc tataaatccc tgcgcggacc tacctcgtct  1200
cccatgagca tggagaatat ggcattgcct cagcagcatt ctcgatcgtc accttacgaa  1260
gcgtcctttt ctccgatcca tcgtcgtctt ccaaagctgc tcctcgttca tcttaccaag  1320
gccttgtacg cttgtacatg cacacgggtt tcattaccat cggcataacg gtgacaaacg  1380
cttgacgctt gtt                                                     1393
```

(2) INFORMATION FOR SEQ ID NO:776

     (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 443 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

```
      (vi) ORIGINAL SOURCE:
           (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
           (A) NAME/KEY: misc_feature
           (B) LOCATION 1...443

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:776

gctcttttg gcaccggcta cggtctgatc gaatttggat ttctgagccg agcttccgtt      60
gcgggcttct ttttttcga gcgaaagaag taatcgcttg tgcttcagcc ttgaaaacgg      120
gcaggatgca ggcgacagcc atgcacgagt aaagattctt ttgttcatgc ttgattatag      180
ggtttgattt atgattattt ttcttctgtc gtagcaccac agaggcaagc cggctcggct      240
cccgttatgc caagagatcg gccggtgcta tccgaagctg taagcctcgc acaccgcgct      300
gacatatata taagggaata ccatgcaagt atgatggata tagatggata agccttttc       360
atcccgatgg gcgaacagcc ggcacggata taccccgtga gcggaagaag ctcgctctgn      420
ctgatcattt tccacgcttt ttt                                             443


(2) INFORMATION FOR SEQ ID NO:777

       (i) SEQUENCE CHARACTERISTICS:
           (A) LENGTH: 970 base pairs
           (B) TYPE: nucleic acid
           (C) STRANDEDNESS: double
           (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
           (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
           (A) NAME/KEY: misc_feature
           (B) LOCATION 1...970

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:777

agaaaggctg gcgtctgctg ctatcttcca aaagccatac gctccttaag aagaggactt      60
cttcacaaaa gatgagcgca tcgggatacg caaagatttg aaggagcaac gaacgatgat      120
gctttcttct gtcagagata ctatcgctca aaaatttcaa agaggtagag ggcgaaaaga      180
ccaaggtgtg caagcaccac ccgtacgaga gcacgacttc tgctttgcgg tgcttttgga      240
gaccccaggg atataaaaca cgaagagttg aataagagaa tcgtctacct cggtgagaac      300
gacaaccttt tcttatggat cttatggagg taagtgaaga gacttcaaac tcaacattga      360
gagttctact cttacgagcg atgagaagca ctcaccgtgg tacttctatc cgatgctatg      420
attgaaccta agctccttga ggggtaaaat ttgcaagcac ggaggtgaaa gactttgcct      480
gtttgctcac catgtaggaa cacgcaggtt ctacaacaag aagaagaaaa gagaggaacg      540
aacatcgaag aagttgaaac ggctctaagt caccaacatg aactataccc agaggttccg      600
tgttttactt cgatactaaa gagcaagcaa atcaatttgt gaggacctcg agaaggtccc      660
caacttccat accatcggct acaatctgct atcatcatcg aaccaacaaa aacaaaaaaa      720
taacaacaat cagaaatgaa aacagcagct tatatgatcc attgccttac caatatgcat      780
gtggtaaggg agatgccacc tacgaagtgg tggacaaatg tgtacagcga gattaaccac      840
agggatgccc tgcatctact cctccagcct caaggagctt tggacagttc ttttcgaaac      900
aaggctttgc cgagcttaac tattgttttt ggaagatcag agcagggtta gaaaaatatg      960
gcatgagaag                                                            970
```

(2) INFORMATION FOR SEQ ID NO:778

      (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 946 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...946

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:778

```
ggacgattgg aatacaatat ttatagaagt gcctatcagc acatttgctc ggtcaagacg      60
gtcaatgacc tcttgcgacc tgagcaccaa ccctgtcaag ctaaaataat caacccataa     120
taaacaattc cccaaaaatc ttttaaaaac aatgacaaac gatatcttgc agcgtcttgc     180
gtctttgcgc aaagtctgag tcatgagcat atcgatgctt atatcatccc gagttcggat     240
gcccactaag cgaatacaca ccggaacact ggaaaggtcg ccgttggatt tccgtttcac     300
cggatcggcc ggcacagtag tggtcacagc aaataaggcc ggatatggac ggacggacgc     360
tacttcctcc aagcaggcca acagctcgaa ggacttctat cgacctctac aaagaaggca     420
tccccggaac tccctccatc gacagtttct tgccgccgag ctgaaagccg ggcaaacagt     480
gggtatagat gacgttgctt ccggcaggt gctgcctctg caaccgaatc ggctttggaa      540
tatacggcat caaactaagg actgacaagg atctttttcga tgaagcatgc gagatcgtcc     600
agaaatccct cgtggagagc ttttcgttca gcccgtgagt atgcaggaga aagcgtgaaa     660
gacaagatcg cacgtgtcaa taaagactgg cgacacaagg tgccaatgcc actattatca     720
ccatgttgga cgaatggctt ggatattcaa tcttcgtggt agagatgtgg agtgcaaccc     780
cgtagagttg cttttggtta tgtatcggct cgagaatctg tcctctttgc tttcctgaga     840
agattactaa ggaggttcgc tcagctatgg aagaaggcgg ggcaagaata tgccctacga     900
agccatatat gaatatatcc cagcactacc tccgaataaa gctgct                    946
```

(2) INFORMATION FOR SEQ ID NO:779

      (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 525 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...525

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:779

```
cggctcgcag atgcttagcg ccaaggcggt aaagagccgc agcggaacct tatacagcag    60
ggaatagaaa tgagcattat tggccggatt gtccatcagg caaaatccag ctcatgcccg   120
gtacggatca tccaacggga atcggagctt tgagagggaa cgtcttctct cccaacaaat   180
tcagtgtcca tcctcctaac gaaggggtga caaataggtg tcgcgcgtta tgcttccgcc   240
accacgacca tataggcaga atgaatgcgg taggcggact gctccgtggg caacctctac   300
tcgaagaatc agttgcaaac gctgtattgc taccgtggga agatcctgcc cccatgccaa   360
caatccggtg agtagcagaa gcggcaaaac aatgcgtatc gtctattcgt tttcatcgtc   420
gtcgaattgc aatcgctgga tcccaagagt tcgtctctta tatcttcatc ggaagcaatg   480
gcttcgggtg aacctcggcg aagctctcgt ccggatcggt tgttt                   525
```

(2) INFORMATION FOR SEQ ID NO:780

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 527 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...527

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:780

```
gcttcgctct gcagccacat aagatcctat gggcgtattg tcctgcaatc gcccgaagtc    60
cccaccctta cgagtgtgag tttgcgtagc cgatccttac ctggcgggta tcgaagtcta   120
tattggccag agcatccagt tcgttcagac tatatctata ttatcagagc cgatgccgtg   180
gctctgcacc gtgatagctt gtcgccatac caccccgtga cggtatgaaa ctccctattg   240
gatacttgca ttcaatacgc tcgaaacgag aggcgactgc atccactcga gcagatcacc   300
taccaatatg accttatcgg ccaattgttc gggacgaata tgcgatgaaa gaccgaaccg   360
tccgtattga tgatcagctc ggagggggga atgttctttt ggttttcata agttcattaa   420
tgttttaaga ggtgagacag acaatcggta agatgggctt ctcgaaaagg tcggccttgg   480
gtctaaaagc tttgcacggn ttggaactcc tgnttctgac ttccttt                 527
```

(2) INFORMATION FOR SEQ ID NO:781

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1580 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1580

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:781

```
cttgccgcta aactcttcgt ggcgagagag atcgaagtca gtccgactag gatgccttcc      60
acttctttga agccgaacgg catctcgaac tcaatatcgt ggcagcattg gcatagtgtg     120
ccagcttgtc atgatcatgg aaacggtttt gtcgtctccg aagccgaggg cgcggtgcca     180
ctgcatacgg aggttttcca cttctcgaac cattgcagct cttcacccgg tcgtacgaag     240
aactgatctc catttgttcg aattcgcgca tccggaagat gaactgacgg gctagatctc     300
gttccggaaa gccttgccga tctggcaaat tccgaaaggg atctcattcg tcccgtcttc     360
tgcacattca ggaaattgac aaatatgcct tggccgtttc gggacgaaga tataccttca     420
tggcaccgtc ggccgtagag ccatctccgt ggcaaacatc aggttgaact ggcgcacctc     480
tgtccagtta gcgtaccgct gatcggacag acgatctcgc agtcgaggat aatctgacga     540
tttcctccag attgttgtca ttcagtgcag tagcaaagcg ttcgtgtact gatctcgctt     600
ctgttgatat tcgatcacac gggcgttggt ggctcggatt gagcctcgtc tgaatgcctc     660
gccgaagcgt ttggctgctt tggcgattct tttgctattt tttcatctat tttggccaga     720
tgatcctcca cgagtcatcc gcacgataac gcttttttgga atccttgttg tctatgagcg     780
gatcttgaac gcatccacgt gtcccgaagc tttccagatc gaaggatgca tgagatggca     840
gagtcgatgc ccaccacatt atcatgcagc agggtcatac ttcccaccag tagcgtttga     900
tattgttctt cagttcagaa ccgtattgtg ctagtcgtac acagctgcca gaccgtcgta     960
tatctcggac gaaggaaaga gaagccgtat tctttgcagt gtgagactat tttttgaag    1020
agatcttccg ttgtgccatg ctatcttgat gtgtgaatct tattgtattc ctacatttac    1080
ctcgcgaaaa taatcctttt tcttcaatag tctcctaaac gatttgagta cacatcccac    1140
aaacaaatgc aacactaaga taaatttagc aagaagactc gaaaggagtt ctaaagttta    1200
gtttttttctg ggtctatggt tcagttggtc gtattgttgt tcgacctgac gaaaaaggcc    1260
ttcctatccg aaaatcatca cactatcatt ttctccttga attcggtttt cataaagggg    1320
atttctggaa tgattccaaa ttcctcctcg tcgttgaaaa cttttggcac ataaaacatt    1380
gatgcatgcg gacttgattt gccacaaaaa agagcaccga acagaagtcc cggtgcacct    1440
taataatcaa tatggaaaac tccacttact tttgccaagc agcatatcga ggttgcgctg    1500
cgcatttgca tctccttctc aacggcctta cggaagaagg tttcggcacg agcaaaatct    1560
cccgtacggc ataagcagct                                               1580
```

(2) INFORMATION FOR SEQ ID NO:782

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 538 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...538

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:782

```
cccgcacatg agacagctgc tcgtccagat actccactgc cttctccatt tagccgttgc      60
tttggctatc agttctttta tttccatatc tctatatggt ttgttttgtc ttgctattcc     120
```

```
tttcaagcac tcgtatttga aacataatac cgattttctc tcctctcaac accttgagga    180
ggtttcccgg cgtatcatat cgaagacgac gatgggtagg ttgttctcca tacacatggc    240
cgtggagtca gatccattac tttcagacct cgggcataaa tctcatcgta tgtgtccggt    300
cgaacttcgt agccgaggga tccttctccg gatctgccgt gtaataccat ccacgcgcgt    360
ccccttgagc atggcatcgg ctttctaatc tcatgcccgc gaaagccgat gaagcccggt    420
atcccgtagg tgaaagaaaa ggattggcct gtacccgcaa ggagaaaaat gggtcaacat    480
aacccctggt cgagccaatt ctatgggcat gccatttggt tggagaaact cccccttaa    538
```

(2) INFORMATION FOR SEQ ID NO:783

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 2029 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...2029

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:783

```
cgggtaccgc caagtattcg tggaagtcga tgttgaaaat acggcccttt tgatgtttgg     60
aatactaact cgcggcgtgc aaggacagtg tatggtggta gtttgactgg ggtggtcgcc    120
tccaaaagcg taacggaggc ttctaaagta ccctcaggcc gattggtaac cggtcgcaga    180
gtgtaatggc acaaggtgct tgactgggag acaaacaagt cgcacaggta ggaaactaga    240
gcatatgatc cggtggttcc gcatggaagg gccatcgctc aaaggattaa aggtactccg    300
gggataacag gttgatcact cccaagagct catatcgacg gagggtttgg cacctcgatg    360
tcggctcgtc acatcctggg gctggagaag gtccaagggt tgggctgttc gcccattaaa    420
gtggcacgcg agctgggttc aaacgtcgtg agacagttcg gtctctatct gttgtgggcg    480
caggaaattt cgagggtctg acactagtac gagaggaccg tgttggacag acccctggtt    540
accggttgta ccgccaggtg caccgccggg tatccacgtc tggtaaggta agtgctgaaa    600
gcatctaagc acgaagccgg cctcaagata agatttcata aatagggtgg ttaaagacta    660
tgaccttgat aggctgcagg tgtatgttgg taacaattaa gccgagcagt actaatagcc    720
cgaaactttt gtgcacccga aggatgcggt ataggttggt ttgttgccgc aaagcttgag    780
gaatatttgt tggcctttcg atatgtcgat tgccttttcg aagtattcag gtgttataac    840
gttggggatc cacctcttcc cattccgaac agagaagtta agccaacggt gccgatggta    900
ctgcgtcaca gtgggagagt aggacgccgc ctttttaag aagcgtgaga gagagggggg    960
gataggatct ccaccctcct cccggaaaaa aaggtgaagg agagagtctc gaatccgagg   1020
ctctctcctt tttattttct ctctctccaa aaatcatttt gcttttctct ctattccttt   1080
tctccttttc cttccttcct ttcctccccc ttgctgcgcg ttattctata acgtgagttc   1140
gatataagtt tatgcgacta aatcttaaat caactcgtga agaagcccaa gttcaaagca   1200
atccgaatga agtttttagc taaccattta catccaaaaa cacgtaggca agaaaactct   1260
gaagttggct ctggtctgaa gcatagaatt gcatttttag cactatgggg aagagctaaa   1320
taatcaaagg tccgtgaaaa agtctaatga caaatctgtg aaaagcaaat ggcgattaat   1380
agtttcaatc aaggcacagt gggtaatggc caaaagtgta ctttgttttt aagaatcaag   1440
gataagccca tgatagtctg tattgccgaa agcccagtgt ggggcgtgag atcgctgctg   1500
tactcggtgc caccaaagct ataaaggcta tatggagggc aacggttatc aggtgacatg   1560
gactttcgac atctctgtgc cctcaaagaa cctcacgact atgcacccga atggaaggat   1620
ggagtatcag ttctctaccg atgataccac tgcgatttgg catcaactca tcgatagcga   1680
tagtattcgg gagcaattcg gcaccatcga aaggctgtcc atgaagcgga tatggtcgtg   1740
aactgcggtg atgccggaca ggaggagagc tgatccagcg ttgggtattg cagaaaacgg   1800
```

```
gctgcacatg tccgtgcggc gactttggat atcttctctt actgaggagt ctatccgtga      1860
agctttgcga ggctgcgcga cagcgaagaa tttcattccc tatatgaggc cgactggctc      1920
gtgccatagg cgactggcta ttgggtatga acgctacgcg ctttataccg cttccgcttc      1980
gggggcaacc cgacaggtac ttttccatcg accgtgtcca gactccgac                  2029
```

(2) INFORMATION FOR SEQ ID NO:784

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2702 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...2702

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:784

```
tttgcgtcgg tttcgtttgg tttcggccag ttggcggatg gcctgttcgt atgacctccc       60
gatttttctg ccagctgaag cacttccatt ttttccggct cttccgttgt atagcagaga      120
tacttctttc ggccgaagac ttcgggtgca tagacagccg attgcgtgcc gcccagcccg      180
atccagacct cttttgtgagt ctggacggat cgttatccat attgatggac aggatctgcg     240
acttccctta tcggtcagcc cgaggaggtt ctgtatctgg tcgaatttgt tggctacttg      300
cgctggtcga gaagaatctt gcaatccgaa ttgttgatga tgcctccttt accaccggcg      360
aagagatgat gtcgtccacc tcctgcgtca cccgattgcc tccccgaaat acttgcgcac      420
cgttttgtac atatacttca gtagtcggcc atattggccg aggcgatcgc tttccaggct      480
tcctcgacga cagttgtttg cgaacgcctt tgagtcgcct catcttattg atgaaagccc      540
catgatgatg atggttacca cggggaaaag ttcccggttt tccttgatgc atcgatttcg      600
aagacgataa accgcttcga caggaggtcg atgttttgtc cgaattgagc aggaagtcga      660
aacgaccgcc ccggtagtac tggcgggcgt agtcagaaag ttgtcgatat tgaaatcttc      720
ccggctgact ttgattcgcg gttttccagt tccggccggt aggtatcgcg catgaattcg      780
taaacgtatt gaagctcggc gttatccctc tgtccgaacc gatcaggcgg ataaggccga      840
gacagcgctg ccgagctcgc ccgattcggt tttcgatatt tttcctcttc gcttttccag      900
agcgtcaaaa gcagcgtttt gatactgtct tcttttcgac gtcgaacacc ccgtcatcgg      960
tataaaaagg attgaacgaa tcggctcctc ttccgtatag gtaaaataga tgccgtcttc     1020
acctttcgtt tccggtggat gagcgaacaa agtccctggt aggagttgcc cgtatcgaca     1080
gcaacacatg cgttccctgt tcgtaatact gccgtacgag atggttctga aaaacgattt     1140
tcccgaaccg gacggtccca ggacaaattt gttgcgttcg tgataatccc gcgtttcatc     1200
ggcaagtccg aaatatcgag atggacggtt tgcccgtcag gcggtcggac agtttgatgc     1260
cgaagggtga aagcagctgc ggtagttcgt ctcggccgta aagaagcaga gagccggctc     1320
gataaggtgt agaatgtttc ttcggaggga aaatcgcccg cattgccggg cagcccgccc     1380
aatagagcgt agccgtgtcc gtcgtattgt gacggggacg gactccatca aggccagcgc     1440
cgagcctaca tcgtttttga tctgccggag tcttcccggt cgtcgctcca tgccagcaca     1500
ttgaaatgcg cacggatgga gcgagtccct gggagtgcgc aacgttcagg tattcctcga     1560
tccactcgga ttgatctgat tggagcgaga gaagcgtgca agtgaaagca tgtttcggcc     1620
tgtttctcga agcgcttgag attttcttcg ctgtcgtcga taaagagtac tggttataga     1680
tatggttaca cgggagcatc agcccgacgg gagcgcaaag ctcagccggc agtcgctgcg     1740
atcggtggag agccgttcgt aacgccgtcc gttgcgacgg cagcaggcag atcgtcccgt     1800
atcggacaag gtagcaggca gaggatttga tccccgatcc gcacttcatc ggcgccgagc     1860
cgaggtcttc gagcgtgcct gccgcatcgt cgcgtaacga gaggtaacgg tgagcaagcc     1920
acgcttgtcg tccgtgcctg cgatctcatc cgccgaaaga gtctgaggcg catatagccc     1980
```

```
gaatcgttga tgatccgttc gaactgatca cggcctccag aaatttcagg acggcatccc      2040
gctcccggac ttccttcgca gaagggttcc gcgacagagc gtcgagaaat cgcttcgttg      2100
cgccatggct gtttcgtcgt tttcgtcaga cagaggtaga cggaatggtg caggaaggac      2160
gttcgttgaa atgccgttcg taagagcggt cgaggaacga gagatgtcct tttccaactc      2220
cggacggtag ctttttccgaa taaaccagtc ctgctgtgca ggatgctgta aacgggcaag      2280
accttcaccg ccttgtgcca ggcgcatgca tcgccgcgta ttcgggtgag gtcacggtaa      2340
agagttcggg cattcaagag agaaagccac ggtgatgtcg gcatctttcg atacgatgca      2400
gcgttctcga tggccagcag cgggaacttc tcttccagtt cgcatttctt cggatatttc      2460
tcatggcgtc ggttcgtttg tcgttacagc ccggacggaa gaatacggcg gacaggacgg      2520
cgagagagca ggtaacgggg atgccggcag cggctccccg tttcatcagc ccgtgttctc      2580
cgtacttgcg gttcatccga acgtttgcca caccacgagg gtggcacccg atacgcccat      2640
gcccagcaga gatactggtt catgccgcac atgtagcaga tgacgacaag gatcacgtcg      2700
cg                                                                      2702
```

(2) INFORMATION FOR SEQ ID NO:785

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1603 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1603

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:785

```
acattttgca ctgcaaagcc cagtttttcc tgagcactca gccagaagga tagtaaccgg        60
cggagcggag tagcggtatc agcataggat cgtcatacat tttcctcctg cacggctttc       120
tccaatagac atcatcgctg caatcgacct tgagtattag gcttggcact gaccacatcg       180
tcgaattgta cagcagaccg gatgcaagca gactatccaa tcggggggta ttctccagag       240
gataacatag ctatgcatat aatcaggtcg ggctgactca cccagaacga gcacaccgtg       300
tgtggcgctt taggggagac tttggtaacc atatctctct ttgactggag ttaatgcgat       360
cgaaaagggc attgatctct ttgccttcca tcagctttgc gagatgctcc ataccaacct       420
ctcacaaggt gcagctgtcg gtaggagaaa gcatagcctc tatcttcgga gagctgatca       480
agagctttgg atagtgccaa actgctgcat agagtattgg gctaagaaac agaagcagtg       540
aggaaagaga aatttaggtc tgcttgggag tagatgtagt agccgaccag ggttagactc       600
acaagccaaa cgatcgcata ccaacctgcg acatgacaat atcgctccaa gagaaagcct       660
ctcgccagaa tgcactggcc tcggctatgt agtagcaaga aatgcagtag ctatataggg       720
gataaaaaca gtccctagca cctgagcagg tacatctcga ctacgtacat aagcgttgcg       780
atcagatcac gggccacata atgcctcgat ataaccgacg gctcgggatg gctcaagtaa       840
taaataaacg accaagctcc aaacaatcgg ggcaatcaga attccgcaaa tcgaacctcc       900
atattccaag agaccaatac tcggcgatag gttcattgac aataagctgt aaaaaggcca       960
ggaaaaacag cagatagctg ggctcagcag gcggtggaca taggtgttag aggcattctg      1020
ccgaagactc aatccgagtt gcgtaatttt gaaaaaaggt cgatcatagt attttttta       1080
ttgctaatga ctttgattta taagtaacat tcgtagacga ggaggctatt ggattgagat      1140
tgtataccgt ttagaggatc atagtagaag tatgtatgtc caaaggtgtc ggaatgtgtt      1200
ctttgaagat gttcaactga aacgcacaaa gatatgtaaa aatattgctg catagatgaa      1260
attaaccaat agactcaggg gacaaccgcc tcaaaatgct cccgtttaag tttgattgta      1320
gtgtgtgttt ttgatatgcg aggggaatag tcttttgaga gagagcaaat actgttgatt      1380
cgttcgatct catggaaatg tcgttcctgt catcactcat ttcgttcagt cttcgtgact      1440
```

```
atacagtgta ggaagtttgg taaggtttgc cgagaggagg tgtgtcggtt ttcagcggag      1500
gacttcggga atggcccggg caatggcgca gagtaaagcc tgacgtgtgg ttcctttctg      1560
gccgatgaca acgatgtgcg tcgggcccga agaatacgtc cgc                        1603
```

(2) INFORMATION FOR SEQ ID NO:786

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 762 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...762

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:786

```
aaatatgaag ttagcatcgc caactttctc ggaagtaagc catagcactc ctgtagatga        60
agtcaaatcc tcgattatct atccactggg aaaaatcttc cggaagcact gctggagtta       120
ttcataaaat tctacaagaa ggtatcttac gaagcctaat tctcccatgc tcaacgagga       180
atattatatt ccggcttggc tttcttgatg aagtcgccaa aggtgtcctt tgcagaacga       240
atacgctgaa agagcgatac gagctgatgc tgcgcaatcg aatcggcaca aaggcgagga       300
ctttatctac gaacagacca atggcagttt acatcgcctc agcgcagatt tacgctcaac       360
accatactcg tcttttatga gccgggatgc caacatgttc cgagctgatt cgccaactgc       420
atcaggatga ttggctgcgt atttggtaga atccaaacaa ctaagtattt tattcatata       480
tccggataat ataaaaatgc atgggtggcc ggtttgtccg attttcccga tttcgtggag       540
taggaatcaa tagcgatagc agtatcacag atcgacaact gtatgataca aagcctcacc       600
aacgatctat ctgcttgata atcacggata tgtaatttaa aagatgtaca aataggagtt       660
ataaaagagt atctgaaaga gaaaaagaat actctctgct tacgaagtat ttatgcatta       720
cagggaaaaa ataccgagaa tcttctttgc agctctgcag at                         762
```

(2) INFORMATION FOR SEQ ID NO:787

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 402 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature

(B) LOCATION 1...402

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:787

```
cggcacaccg aaaggcgcaa gccgggtcgt ccgcgcaaaa acgccgaggg gaagctcccg      60
aaagcgaaga cgtcgcagcc gctcctgccg agccgaacac gaggaagctc aggccaaacg     120
caagcgtggc cgccctcgca aagcggcgaa gagatagcgg aagagacccg ggaagatgtg     180
cagcagctcg tggctcggct gctgcagagg agacaaatgc aacggagaag gagagtgccg     240
ggcggagccg gcggcgaaaa cgtccaccgc atcccctgcc aaagcccctg ccaagccctt     300
ccccgtccgg cggagaccac cccgcgcgtg gcaccgtctc cccttccacg acgcccgtga     360
gcgagccggc caaggacgat gccaagcccg agcgcccgct cc                        402
```


(2) INFORMATION FOR SEQ ID NO:788

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 639 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...639

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:788

```
gggccttaat agtccggcac caataccgag aagtgagata tgcaaggagg aagaaattag      60
agatatgctt gactcctgtc aagtgatccg agggcttcca tatcctttgg catactgtga     120
gaggaaagtg aaaagcgcac ttccgtacaa tgtttgccga tctcatagcc ggccttcgtg     180
aagagttcga tcttgttaca cttttgttcc acttgttggc tgttgtgtag gtcagaccga     240
agtcttacgc aaaccgttgt cccaactcca tttatctttc aggtagttgg catcatgttc     300
aaatagaggt tacctgccac cgtgttttct ccaccggcag cccgttggtc agagaagtct     360
gagaggcatt tagtccggtc acacctttta tatccagtcc tttttgggag tgtcagatgc     420
agtgtttgct tcttgtgcgt tgcaagggtg aacagcaagc cacccattgc cagaaaaaca     480
atcagtccgt tcatctggta ttttcttctt tttttaaagt gaaaacaaga aagccgcaca     540
gaatcatcga tgcttgcacg gcttgaaaaa aggtgggccc aataggatcg aacctatgac     600
cctctgcttg taggcagatg ctctaaacca gctgagcat                           639
```


(2) INFORMATION FOR SEQ ID NO:789

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 831 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...831

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:789

```
cccctcgcat catacgagtc aagaaaaact ttttacacaa cacctgatga tatgcccacc    60
ggggaaaccc acaagtctcc cccttcttcc tcgcatcggg actgtccgat gccgaagtct   120
tacatagccg agctacccac ggctcgacga actgactccc cgcgagcgcg aatcgctctg   180
gagcaagttt ttcgagagtt caaagatccc atcatcatca tcctgctcgt ggccatggtg   240
ctttctttgc cgtggcttgc tatcactact tcacgggcgg agagggcngt ctcctctttc   300
tggagccgac aggggtgctg ctcgctgtcg tattggccac ggggtagcct ttttcttcga   360
gatgaaatcc gagaaagagt tcgagatcct gatcaggtca atgaagacat attatataag   420
gtatatcgca acggcatgat cgcagggtgc tcaaaaaaga aatcgtcgta ggcgacctgg   480
tcgttctgga acgggagagc aaattccggc cgacggccga ctcatcgaag ccatctcgca   540
cagatcgacg aatccagcct gacgggcgaa cccgttgtaa acaaaaccct gaccggcagg   600
acttcgacgc ggaagccacc taccccctccg attacattgc cgaggcacca ccattctgga   660
cggccactgc actttcaggg tggaaaggtg ggcgacgcca cggaatacgg acgggtattc   720
gagggtgccc gaccaacaac agcgtacaga cgcccctgaa cagacagctc gaccatctgg   780
ccggctgatc acgaacgtca gctatagcat agcagccttg gtactcatcg g            831
```


(2) INFORMATION FOR SEQ ID NO:790

        (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 531 base pairs
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: double
             (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...531

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:790

```
ggccgatacg gtggttatca ttgatggtac tattctcggc aaaccgcaaa cagagaagag    60
gccgctcgga tgctacgtac gttaagcggg cgtacgcaca ggtggtgacc ggtgtgtgca   120
ttagccaccg gtgggagaca agggcttctc gtgttccagt ctggtaacct ttgcgcatct   180
gagtgatgag gagatcatta ttatctcgaa cgctatcgcc cctatgacaa agccggttcg   240
tacggataca ggaatggata ggctacatcg ccattcagcg agtggagggt tcgtctacaa   300
tgtcatggga ctacccgttc atttgctcta taatgaactg aaaactttgg cgaatcaaat   360
taaagtctct atatttgcac cccgaagtgt aggagagata actaacaaaa caatataaga   420
gcaatgaaaa gaacatatca acctctaacc gtaagagact gaacaagcat ggctttcggt   480
ctcgtatggc acggcaaatg gccgtcgtgt attggccgtc gccgtgcaaa g            531
```


(2) INFORMATION FOR SEQ ID NO:791

(i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 570 base pairs
    (B) TYPE: nucleic acid
    (C) STRANDEDNESS: double
    (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...570

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:791

```
atccccgaca ttttttgcag ataggacttt gaaagtaagg cctctttcta atgaaaaacc      60
tacctttaca gacgaaacgt ttcggggaaa atatgatgaa aagagagaat gaaaagaatc     120
aatatcacca tcggctttct ctttataact tcgtagtgat gtccgtattg ggatacccgc     180
gcgaaaggat agctccgacg gtgccgaccg gctggtgacg tatctgttgg tttgcgcttt     240
ggagcggtcg tactcatcct attacggtgg gtattgatcc ggcggtacaa gatggcgagc     300
gtcgccggca cgatatggaa cagtatgccc gatacgatga aaacccgacg aatagtcacc     360
taacgctaca gtgaagtatg acgaacacgg caagctctat ccttacatat tcaatcccat     420
tcttcgaccg gtcgtgtggg gggccgcagg atacgccctt tcaagggaat ggagcccgac     480
ccgacgaaaa atcggagaaa gctgggagaa tttcgcatgt gagcgaccat taattcggtg     540
ttggcaaacg ggccttcttt gccggtaaga                                      570
```

(2) INFORMATION FOR SEQ ID NO:792

(i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 780 base pairs
    (B) TYPE: nucleic acid
    (C) STRANDEDNESS: double
    (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...780

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:792

```
cagaagaata aagggtaagg gtaggtcaaa aaaggtatta tagaatagac tccaaacgtt      60
ttgcacaaaa ccgacggagt tcgttcgttt gtaattgtca actccccttt caagctttcc     120
tgaaaaatga gttctatccc cttttctcaa tgcgatggct aatttgtaga gtgggtgcta     180
ttggttcaac atgtctatag actgatgaat aatgaagggg tatgatgggg cttttttaatc     240
atgaaatctg caagtttctt gctataaaga taagaaaact tgcagattta tcaaggtttt     300
cgcaaactaa tcagggcaac cgcatcaaat ctttagtagc ttttgagata gtctatattc     360
```

```
agagcagctt tgaacaacct cttccgtaag gaagtttgtc tttatgcccg gatacaatgg      420
ctaaagcaaa ctttctcaac ggtttagatt ggtggctgaa taatccttac gagctcgaca      480
agtatcctcc taaaggttac atccaaatgc caatggagtc gattctcaat tccccaatgc      540
ctcgaatata ttgtccgatt aactgacaat cctcgggtgg taaactgcga tataatactg      600
cctatctatg cgagtctctc cctctaaact actaatccac gctccacttg aattaaactt      660
ctcaagcctt gccattgact atattcccct cctcaaagac ctctgaagct agtaatgtgg      720
tataaagtcc tcttccaata cgaccatgat ctttctccaa ggttcataac gatgacacct
780
```

(2) INFORMATION FOR SEQ ID NO:793

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1069 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1069

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:793

```
tcgggcagta ttttcagagt gatttgttgc ttagtgaagg aagatattcg aagggccgat       60
acgacgagga aaatatgaag agtacggtag tgccctttgt aacggcatca tgctggcggt      120
agctgcgggg ttagccgaga gcaggggttg aggcggattt atatcgccaa tcacttcggc      180
gaccatgcca tatacccgat tgtcgtgcct catttattcg tccgatgacc gaagctgttc      240
ggtgcgtacc acgaacggcg tgctcataga agcaccttat actgatatta ctaaacagat      300
attgcacgga taggagcttc attgggtata gactatgccg agattggagt tgctacaagg      360
ggggggtgtt tcattgtggc gtttgtggta ccgtgtagag cgcagggagg ctttgcacga      420
tgccggcatt ccggatgcca cgagtacgaa ggttgagtat acttcattcg gcacgaagtt      480
atcaggcgcg tgaagaaaat agggctgcta tccgatacgc atggctatat cgacgaaaat      540
accggataca tttcgccgat tgcgatgaga tttggcatgc cggtgacacg gctctgtaac      600
ggtagcggac tatttgtcgg gtttggctcc gctgcgtctg tctatggcaa tatagacggg      660
caagacattc gtctgcagta tcccgagttc tgcgcttttg tgtggaagag gtgaaagtgt      720
ttatgacgca tatcggggat accccggtcg gtacgaacct cgtatatatc gaatgctcgt      780
gcagacccac ctcgtctttt tgtctgtggg catagtcata ttctcaaagc tattaccgat      840
aagaagttgg atatgctgca tctgaatccc ggagctgcag gtagtatggn tttcatgctg      900
ttcgtactct gatgcgcttc gtgaatcgat ggccgagata tacnggattt acaggtgata      960
gaattggccc gatcgataga tattaaagat gaaacatttc attcttcaaa gcttgcattt     1020
tcttctcccg ctggtangcg gatggatatc ctcttcgtgg tcgtggtgg               1069
```

(2) INFORMATION FOR SEQ ID NO:794

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 604 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...604

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:794

```
ataggggaat gtttggcccg acgtatatca gcaggtgggc aatctgctcg agtcgtacgc       60
caatcgaacg acagagccat ccctcaagcc atcggccgtg cctcacctac ttcggcgaat      120
actggggcaa tcggctcttg gctgcagcgg tgctctgcac gagctgcggt acagtgaggt      180
gtataggact tgggaaaaga ggagagggct gaagactgac cctcaagtac tgccctatgg      240
catattaaca atagaatcat ggtagccagt atagataaag aagccgttgc cggctggagg      300
cagagatatt ccccggcacg atccacctga tcgacaaacc ccagccatcc ccgaagccat      360
aaggctgcta tcggccagtc gcacgatcgg ctcgacacgg agacccgccc ttctttcgtc      420
cgtggcgccc gtccgtccgt actctgatgc agatgtccac agaaacggac tgcttcctct      480
tccgactcaa atgatagata taccggagga actgcaacag ctactggaga atcccggcaa      540
ctcaaggtag gactgagcct gagcgatgac atgacggtga tcagacgggc aaaccgatcg      600
aacc                                                                   604
```

(2) INFORMATION FOR SEQ ID NO:795

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1162 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1162

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:795

```
cgagacttcc attcccccg atttatatgg ataagaagaa cgccattgtt attccgatga       60
tacagtctac attcaaagcc nggacaaaat actccgagga cgtcttttca ctgcaactca      120
agatatgggt gagtacacca tattcaacat tccggcgact tactatgtga gtgaagagga      180
ggacaaatcc gccgacccat accgattcgt caaggggatc ggacagcaaa gcctgccgct      240
tctccttcat gccgagacca tcggtttctc caaccaccaa agagcaaaaa tgaatacctg      300
tacatactga ttacacttttt actctccggc ttttttttccg gtgtgagatt gctttccttt      360
cttcggacaa actgcgtctt gagttggaca ggatagaggc gatctcacag gcagagcgtt      420
aaacttgctg tatcgacatc cgaccaactg gtgactactc tccttgtggg taataatatc      480
gttttggtag ctatggtctg ctgatggcgg gattgctggc cgcacctttg gcgcaatggt      540
tgataacgat gctatgatcg tcgttctcca atctgtctta tccactatat catactgttt      600
accgggggaat ttctacccaa agccattttc aagaccatgc caatatgatg atgagggtat      660
tcgccctccc tatcgtagcg atctatatct gctttatcct ctgtctaaac tcttcaccgg      720
```

```
tttatctcgc tctttattcg tctggtggac aagaattatg tgcctacaac agtagggttg      780
gggccgtaga tctcgatcat tatttggcag aaaatatgtc cggagaaaac gaaagaacga      840
cttgactacc gaagtgaaaa tcatccagaa tgcgctggat tttccggtat tcaggtgcga      900
gactgcatga tcccacgcaa tgagatgata gatgtgagtt gcaaacggat attgaagtac      960
tcaaaacgac ttttatcgat ccggtttgtc caagatcatt atctacagac agancataga     1020
tgacgtagtg gatatatcca ttcgagcgaa atgtttcgtg ggcaagactg gcaaaaacta     1080
tcaatactac tgtattcgta cccggaaagc atgtatgcca ataaactatg cgactactca     1140
tgcagcgcaa gaaaagcatt gc                                              1162
```

(2) INFORMATION FOR SEQ ID NO:796

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 4479 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...4479

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:796

```
cagcagatcg gactgaagac caatctgctt tattggggta cgacgactcc aatgcaggat       60
tggagtttcg catgggaaag aagtggacac tcgatgttcg ggaggttaca accctttttac     120
attcagccac catcgcaaac tcaagcatgg ctcgtggctc cggagcttcg ctattggacg      180
tgcgaagctt tctccgccac ttcttcgggc ttcacggcat cggaggtgag tacaatgtaa      240
atgattcgac atccccatcg gccggctcaa aaagctcaac aactaccgat acgaggatac      300
gccatcggtg caggtctgac ctatggctat cagtggctgc tggcaaaaga tggaacttgg      360
aggcatcgat cagcggagga ttcgtccact tcattatgac aaattcgaat gtgccaagtg      420
cggcaaaaag atcgcggaag gaagaacgac tacttcggtg tgacgaaagc cacactttcg      480
ctcatataca cattaagtaa taccttattt atacagacaa gctatatgaa acagagtcgt      540
atatcatcct gtcgtttctc ttcggaatgt ctacgcttgc cgtgacagcc agacccatct      600
cgggggcatt aaggtgagcg agaagcacgt ggtcaagaaa cgggacatac cgccaacgta      660
aagatggacc ttgatcttga cggccaaccg gatatgaaca gcaatctgct gatggtggtt      720
accccccatta ttcgtccaat acatcgaacg atcaagtcgc tctccgcccg ttcctcctga      780
tgggaacaga cgttatcgca tcatcgaccg tcgtatcgct ctcgataagc acccatctac      840
aatcagcccg acaccaagcc ttctgcgatg gtaaagcgtc gcacggcaag gaacagagca      900
tggactattc tgccgctact ccatataggc ctggatgcgc cactcatcaa tgattctatt      960
ggctgagaac tcgggctgtg cgactgccca ctcggatcag aagaaaccac acttacggac     1020
gacgctttgt gccactgtat gaagcggact atcaatacga gatcattgta cccgagggga     1080
gctgctgaaa aaacgcgaag agactctctc cgctcactta gcctatcggt agggaaatat     1140
gtggtcttgc ctcagttcga cggcaatccg gccgagtggc acgtatcgac agcaaactga     1200
aagaaatcgg aaacgatagc gatatatttt cgaaagctc tccatggtag gctatgcttc      1260
gccggaaggt ggcgagaata caacgcgaag ctctccaagg atagggcgca ttcatttgca     1320
agcatctcgt taacaagtac cccatcctaa aaagtcgatt cgaatacgat tgaaagggca     1380
ggattgggca ggtctgcgtg cggctgtaac caagagcggg cctcgcaaaa ggatgccata     1440
ctggagatca tcgaccaaaa gccggtcggt agcgtacagc cgcactgcga gctatcgatg     1500
gcgggtctct ctatgccact tgctctcgga ctattacccc ccgcttcgcc gaagcgagct     1560
tacattccta tcgtggtcaa aggatttgag ttggacaaag cacgtgaaat tatcaagcac     1620
accccctctcg tctgagtctg gcagaggttt acgccgtagc gcagagtatc cggaagggag     1680
ccacgaacgc tacgaaacgt ggacgatagc agagaaactt ttccgaaagc gatagagccg     1740
```

```
acagccaatg cggctataat agacttcgtg ccggcaggta tccgcaggct ctggctcgac      1800
tcgaagcacg caaagcgaac ccaaactatg gatgctgttg ggcttggcat atgcctacag      1860
cgaaaatggg ctgaagccga gagctatctt actcgcgctg cgcagcaagg cggcccggag      1920
cacaacacaa tctgaacgaa ctgcgacgct atatgcaaga aatctctaaa tggaaaaaga      1980
ttcttagaaa acaatattca ctttttaaaaa aaaacgagat gaaaaaaaca aagttttct      2040
tgttgggact tgctgctctg ctatgacagc ttgtaacaaa gacaacgagg cagaacccgt      2100
tgtagaacta acgctactgt tagtttcata attaagagcg gtgagagccg cgctgtggcg      2160
atgaccttac agatgctaag atcacaaagc tcaccgccat ggtcttgcag gtcaagttca      2220
agaaggtatt aagacagtgg aagaggacgg cggatcctta aagtagaagg aattccgtgt      2280
aaatctggag ccaaccgtgt cctgtcgttg tagccaatca caattatgag cttaccggta      2340
aaagtttgaa tgggttgagg ccttgacgac ttcttgacag ctgaaaacca aaatgccaaa      2400
acttgatcat gacaggtaag tcagcagctt ttacaatcaa accgggctcc accactatgg      2460
ctatcctggt gggactgcat ccgacaacct tgtttctgcg gaactcctct tgccgttact      2520
cgcgtgcatg ccggtatctc attcgcagag tagaggtaaa tatggctaca cagtatcaaa      2580
actactattc ttttaaacag ctgacgctaa aatcgcagcc cttgtcgcaa agaaagattc      2640
taagatttcg gcaattcttt ggtctcaaac actaatgcat atttgtatgg agtccaacgc      2700
ctgccggtct ttacactccg gatgctgcag gagaaacata cgaatggagg cgtctttgaa      2760
tacgaattat gctgtaggtg ccggcttcta tgtctggaaa gtaaatatga tgcaagcaac      2820
gagcttcgtc cgacgatcct tttatctatg gaaagctgct cgataaggac ggcaaccctc      2880
tcacggaacc accttgacgg atgctataaa tgccggattc tgcgacggag atggcacgac      2940
tactatccgg tattggtgaa ctatgatggc aatggctaca tctattcagt gctattaccc      3000
aaggacaaaa caaaatcgtt cgcaacaacc actacaagtt tcgctgaaca tcaccggccc      3060
cggtacgaat actcctgaaa atcctcaccg gtacaagcca acctgaatgt tacttgccaa      3120
gttacacctt gggttgtgtt aatcaggctg ctacttggta atcgacccgt caaacgacta      3180
aaaaatttca tagtttgtct atatcggaat acagggagcg gggttcgctc cactcctgta      3240
ttcattctct ccaaatcaaa tagggaaatc ccaatcacca atcaagaatt attgttatga      3300
acgacgctaa gaaatatatc gtatcggtgc tgtcttactc gtggccggaa tgtttggcgg      3360
atgtatcaaa gaggactatt cgattgtccc cgtccgtttc gcctgaccgt cagggcttgg      3420
gatgccgata gcaagatatt accgaaaccg gagccgtgca gcgcgtcgtt attttcgttt      3480
cgacgaaacc ggccgccgca tcgaccgact gatgatggac gccgcacagt ggctgcacgc      3540
aaaccgatac cattggaata cgacggcccc actacgggtc tttcgtggca tgggccaacc      3600
ccgacgatca catgctggaa gaaacaccaa tgtgcaaaac gtcaaagact tattcttcag      3660
gctttcctct accgaggtat agcccaatcg cccggagacc ttttttccgg tgtactgacc      3720
tgccaataga gtacggctct atcgaacagg gtacagacca aactgtcgat atcaccgccg      3780
tacggcacag gtacatatca tcatacgcgg ctatcaagag tgctggaagc taatggcccc      3840
agacaactgc cagactatgc cgacatcctt tgggagaaac tcccgacact tataccggcc      3900
tggccgagct catcggcaat ccgtccaata ccgtcccgac ggacagatac aaaacgggga      3960
tttcatttcc ccatcttcag agtttatccc acacttgata ctactcctct gcatctcaac      4020
tctatgcata cggacaagaa ttgctgaata tcagcacagg ttcggatgag taccattcat      4080
acccgtcata ggcaaaatgc tcaatatcta catagactgc gtggagcaaa cctcaatgta      4140
ctcgtatccg tcacccccttg ggacgagtgc aacaatatgc agaatactaa tccgacagct      4200
attatgaaaa tgaatatttc catcatcctt cgggactact tccacgcctt ctcctgttat      4260
tgctttaacg atggggcggt agcatgtacc aaggaagata atcccgatca gccacctcgg      4320
acgaagtggc aacagtaaag atgtcgcttg acgatgtcga atgcgaggcg gagacctcta      4380
cagtggagaa aatctgatca agaaagtgcg atattcgtct ttcgtgaagg gctaaacggc      4440
ctttgggttc tcgacaagca aaactatttg cttcggggc                           4479
```

(2) INFORMATION FOR SEQ ID NO:797

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1772 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:797

```
caagtacatt tttcatcccc aaatggctna cttcagcagc aatgtgatct caactacagc      60
cgcatgncgg tgcgtcggaa cgaatggatc atcgggatga gtncaacgag gacttcgatc     120
gggtgaaaac gctgctgctg cgtctgacga tgaggaaccg cgtattatca aagacccct     180
ccccaccgtg gtcttgagga attggccgac agctctgtga gggtgatggc acgtgcgtgg     240
tgcgcacgga cgacctgtgg aatgtttact gggatataaa cgaacgaatc tatacgaatt     300
caatcgtcag ggtatagcat tcccgttccc gcagcttacg ataacggatc cgccgccggg     360
caggagcgaa gagggaaaag tacggaagct catcgccgga gaacgtctcc accaatacct     420
ccctgtaaga gttgaagatc tggatttgga cacgaatccg agataacatc cctgctcgtc     480
tatgacgggc ggttccaagc cttggtgtcg tcgaagattc gcatgatggt ctccatggaa     540
tcgtattgac tattttggcc ggaggagaaa ccatgaagcg gctgacctga atctctcata     600
cagctccggc cggaacatga tattgcggat attgtccgca ataccagccc catcagcagg     660
ttgttctcgt ccaggacggg gaagacttgc gatggctgat accgaacacg tgtacgacat     720
ctcccagagt catatgggtc tcaccggttc gaaatccttt tctatcaccg catccaacgt     780
catagcgtca gcacggcctt gtctttctga tgcgtcagca gctttccttt ctggccaaac     840
ggagcgaata gatgctgtgc ggcatgaaaa ggcggatagt gggtacgaac tcgtactcac     900
gagcatgagc ggaaggaaaa gattgtatcc gcggtcagct cggcgatcag gaaaatacct     960
gtcagcggcg cgtgcatgac gcggccatca ctccggccat gccgaggaga gcaaagtttt    1020
tctgtggcaa tagacctcga tgaagggaaa gaagttcagc gcataggcaa agatgaatcg    1080
ctcagtgccc ccatgaacag actgggcgcg aaaagtccgc cgcagccccg cccgaattgg    1140
tggctacgga agcgaacacc ttcgtgatga tgataatccg aggaaaacga acagcaccca    1200
ataggaattg gaatacggct cgaacggctg ccatccatca aagagctgta ctggccgccg    1260
agcagggcgt tgatgtatcg tagccctcac cgtatagcgg agggaaaagg aagatcagac    1320
cgcgaggata aaggccgata tgaggtagcg ttggcgatag tgtggaaagt tctgagtttg    1380
ctctcgaaga cgaacatgac cttggagaag tagaaagata cagtccgcag aatacaccca    1440
gtagcagagc ataggggatg cgatccatcg aaaaggatcg ttgagcgtaa agctgaacat    1500
ggctccctgc cccgtgatat ataggatacg gcggcggcac tgaccgagct gatcagcagc    1560
ggcagcacga cgacatggtc agatccagca ggaggacttc gatgacnaat accaacccgt    1620
gatcggagcc ttgaagatcc ccgaaatggc acctgcggcc ccacaccnac gaggagcatc    1680
ancgtcttct gctccatgcg gananccngc ncnagttgga gccgatggca nccccgtna     1740
gtacgatagg gggattcggt tccgccgatc cg                                  1772
```

(2) INFORMATION FOR SEQ ID NO:798

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:798

```
cgcgtaagca attttctgga agaggtgact gcgatgccgt tcgggcataa gctatcttca      60
cgcatggggg aactattctt tgtgctcagg tttatgcggc ttatatgagc ttgagacttg     120
cttcgagcac caaacaccct atgggggatc gttatgctgg tcgtttctga taaaaaataa     180
tgaggcggaa tatactgcgg cccaattatt ggtaccttta cctccgataa aagcatcaac     240
atgaaccatc catcggcata ttcgactccg gttatggagg acttaccatc ttgatgagat     300
ccgcaaactc atgccggagt acaactttgt ttacttgggc gatatgcccg ctctccctat     360
ggcaaccgct cttatgaagt agtttacaaa ttacgctaca ggctgtgaga aagctctttg     420
aactcggttg tccgctagtc atctcgcttg taatacggca tcggcaaaag ccttgcgaac     480
cattcagcaa gcgatctgcc caatatggag gatcccaccc gtcgtgtcct cggtatcatc     540
gcctacggtt gaagccgtag atgagatcac aagactaagc acgtaggttt ttggc         595
```


(2) INFORMATION FOR SEQ ID NO:799

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1156 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1156

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:799

```
ggcgattatt tccttcgcga caatttgtca cttggtatct ccgttgcacc ctgcgagtgg      60
gatggagaaa caattggacg gccaacgtta agttgtcgtt tgtcttcttt agaatctttg     120
tagaggacgt tttttcgcaa ttgcagtttt tcagtacacg tcgcttttct caaccgttga     180
gaaaatcttc gtcttgacga gggcgacgcc gtagatggct gagaggcgat ctcgcaggat     240
ggcggatcgt tgccgcgaag gctgacggta agcctgcaat tctcgacaaa atccgcgagc     300
ggatggaggc tccggcatct ttcaccagtc gcatcacttc tccagcaaag gatattcgaa     360
ggcgatagtc agttcttcat acaggatctc ttcttccggt cggctgcttc gagggcttcg     420
cgagccgctt cgcgataagc acgataagac cgctcgtgcc cagcttgaca cctccgaagt     480
agcgcactac gcgacgaata cctgcgtaag ccccaatgag gtgatctgcc cgaggatggt     540
ttgccggcag tccccgatgg ctctccgtcg tcattggatc gtgtgcgtcg cctttggctc     600
ccagcttgta tgcccagcat acatggcgtg catcgaatag cggcgacgca gatcggccac     660
aagcgacagg gcctcctctt ccgacttaca ggataggcga aagccaggaa gcggctgcgt     720
ttctccgtgt actgtcttcc gagggagcac tgatcgtgag gtaggaatct tcggccatgg     780
ttcaaggaga gcctcatctg taccttcctc ccgggcggca aacttttcgg acagacggag     840
aggagcgtac tcatttgttt gatactggcg agcgtctctt cgtcacttcc tttttctgca     900
agcgcagggt cagcagaccg tatatggcag taggcaagtc tctatctctc ccgtattgct     960
ccctgcactc ttggctctaa ctgtacgatg gcagggagca cctgatagta gagtccttga    1020
taaatcatcc tttggggtcc gccatcagtc cgtgagtgta tctcttccat ttgcatgagg    1080
ctatgcggac gatattgata tgcccctgct cgcgaacgcc cttcggtaag catcatcttc    1140
accagcttcg gcatac                                                     1156
```


(2) INFORMATION FOR SEQ ID NO:800

    (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1076 base pairs
                    (B) TYPE: nucleic acid
                    (C) STRANDEDNESS: double
                    (D) TOPOLOGY: circular

          (ii) MOLECULE TYPE: DNA (genomic)

         (iii) HYPOTHETICAL: NO

          (iv) ANTI-SENSE: UNKNOWN

          (vi) ORIGINAL SOURCE:
                    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

          (ix) FEATURE:
                    (A) NAME/KEY: misc_feature
                    (B) LOCATION 1...1076

          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:800

attctcttct tctctctttc gaatggccag ggaaagtcag ncgaaaaagg aagggacttc   60
cctttaccct ttattttccg gctgcgtatc gnagggcact cgcgtcctgc attcagagct   120
tgaggttcat atccaccact tcttgtcttt gcggctgaaa atagcttcga taccgcctgc   180
cagatagtcg aaaggatctc aatgaaggga gaagcggctc cgagcatcac gaagttggat   240
gcacgacatt gcctacctca tcacgggcga tgctgtccgc atcgatcaga acgtatgagg   300
aagagattcg atcttggaga taactgacgt agtctcggga tagtcgggat gttgatgaac   360
ggaaccgtat tggtcactac ataaccgtca ggttcaaata aggaagatag cgcaatgctt   420
ccatcggctc cacggagagg aaagatccgc tcccccgata gggatcaggt cagagtaaat   480
gggtgcatcc acaggcgcag aaaagactgt acatcaccac ctcgctggct catgccatgg   540
tttcggcctg cttcaaatac aaattgttgg tcagagcagc cgaaccgaag ctgctgcaat   600
ggacaaaatg ccttggcctc cgacaccggc caaaatatat ctgttttcat ttctttattt   660
cctcctactt caatggttat tccttgcctt tgcacgtttg gcagctttgg cgtcgcgagc   720
atgcttttgg atgcaacgcg acggggaatg atgacggata caccttcata gttgatttcc   780
tcccgatgat gctgcatagt tcgtcatgat tcttgggtac cggcaacagc tcctgatgtg   840
atcggggatc tactccgata ccgcgacaga tggcctctac ttgccgtatg cagacgaatg   900
ctgacctcgg tcatggagat ggattcattg tcgagataat caccgtaatg tgctattctc   960
attgatggca tcgagaagac cgttattccg aatgagtgaa agtagagtcg ccgattacag   1020
acacagccga acaagccggc atnggcagcc cttnggcatc gtgatagatg caccat   1076

(2) INFORMATION FOR SEQ ID NO:801

          (i) SEQUENCE CHARACTERISTICS:
                    (A) LENGTH: 1015 base pairs
                    (B) TYPE: nucleic acid
                    (C) STRANDEDNESS: double
                    (D) TOPOLOGY: circular

          (ii) MOLECULE TYPE: DNA (genomic)

         (iii) HYPOTHETICAL: NO

          (iv) ANTI-SENSE: UNKNOWN

          (vi) ORIGINAL SOURCE:
                    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

          (ix) FEATURE:
                    (A) NAME/KEY: misc_feature
                    (B) LOCATION 1...1015

          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:801

```
aactggaaaa tgaacaaaac cctccaagag gggcttgcat tggcaaaggg ttggacgcag        60
ctttgaaagg gcgtacgatc aactgtgacg tgattatcga accccattca tccatttggc       120
aagtattgcg gcagccatcg ataccaccgt atcggagttg cagctgaaaa ctgtgccgat       180
aaggagtcgg gtgcattacc ggagaggtct ctgctgctat ggtagccagt accggtgctc       240
ggtattgatt ataggacata gcgaacgccg tgcttactat catgaaacat ccccatcctg       300
atggagaagg tgaagttggc tttgtccaat ggcttgaccc ccatttctgt gttggcgaag       360
tcttggaaga gcgcgaagca ggcaagcact tcaggtagtc gctcgtcagg tggaagaagc       420
cctgtttact ttggatcaga cgactttgcc aaattgatcc ttgcttacga gcctgtgtgg       480
gccatcggta gggtaagacg gctacggcag accaagctca agagatgcat gcacatattg       540
taagagtata gccgctaaat atggaaaaga ggttgcgaac ggttgttcat tctctatgga       600
ggcagttgca atgcagccaa tgccaaagaa ctctttaccg tgcggatgta gatggtgggc       660
ttatcggagg ggcttctctc tcggtaacaa attcttgcct atcatcgaag cattctgaga       720
ttgcttattg tttcaaccct ttcgggcgag ttttatttca aaaggagaaa cgaacgagat       780
gaaacgattt tcttttttagt ctcctattgc tttcgttggt ttgccattcg tcacggaagc       840
tcaggtttcc acatcggctc atagcaaagc cccgatcagc atttcgaagc tctcagtgcg       900
gagcacgaag gagaaggcat catcaccatc ttcagcctgc atccgtaaag ctgccgtggg       960
caagtatccg gacgttggcc nttgatcgan ggcgagagca tatccgttga tccaa          1015


(2) INFORMATION FOR SEQ ID NO:802

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 577 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...577

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:802

gatccggctg actatcgccc gctattatac gccttcggga cgtagcatca gaaaccttat        60
gcaaaaggga atttcaaagc atacgaacag gaattgatgg tcgcttcaaa cacggcgaat       120
ccatccacag cgacagcatc cgtttcccga ttctcttcgc tacaagactc tcgtcacggg       180
gcgcaccgtt tatggtgggg aggcattatg ccggatcttt tcatcccaac ggatacggcc       240
ttgttaacaa gctgcatcgc gagctgctga acaagggtat ctttaatcgg gctgactcaa       300
atatgtggat gcacatcgtc agaagctgcg ccaacgcttc cccacagaca gtcatacgcc       360
acgtttacat tcccgaagaa ctgactgaaa gctgaaagca tttgccgaag ctgagaaaat       420
cacatggagc accgaacttt ngctcaagcc gaagagctta tcaagtgtca gctccatgcc       480
tatatcgcac tgatattctg gggagaacga cttcttctat ttcttcaatc gcatggatag       540
gatatataaa gcactcgatc tctcatgatc cgacgaa                               577


(2) INFORMATION FOR SEQ ID NO:803

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 850 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular
```

(ii) MOLECULE TYPE: DNA (genomic)

       (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...850

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:803

cgaagccgtc gtgatgcagg cacagctgga aatggaagcc aagcgtttgc caaggcgaag   60
tctatcctcg aaaaatttat tgccaagagt actcctcaca gtattggttg gcacgaggtt   120
tcatcctctt gtccgatatt tataagaaga aggggatacg tttacggcaa ggcagtattt   180
ggaaagcttg gaaaagacta tcctaatcat gaggatgaca ttcacgaaca gatagcccaa   240
cggctgaata atcttctgta cgattcatca ctctgagttg gaaataatga acagatcatg   300
aaatatcaat tatatacggc cgtcataatg gctctctctg tatatccgtt tgcggtcaaa   360
ccccacgaaa tacagaaacc aaacgccccg accgctgcgc agggagctta ctatcgttaa   420
tgaccagact gtggagatgg acatgcggat ccgcttccgg ctgcatacaa ggccatcgaa   480
cctcgattaa acctttccgt ccggaatata acaagcgtac attcggattt gtccctgaat   540
ttcctcttca ggcaggaaca atcttccgaa tatcctgccg acggaaggca tatgaagcac   600
cgggggtacc tgaatatcgg tatcggccat acgctaacca gcgaatggat gccggctatc   660
gtctgataga tgcagagcag gagagatgaa tcttttcctc tcctatcgtg ggatgaaatt   720
ggctttcaat accgggactt cgacggcgac agaaaggata gacgaaatga tggcaggaat   780
ggacacgagc agcgcaggcc ttcctttgtg cttgctaccg gcttggatta ttcaaccatt   840
atttcaatac   850

(2) INFORMATION FOR SEQ ID NO:804

         (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 680 base pairs
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: double
             (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

       (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...680

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:804

aggatccccc gccatgcggc gatcttatcc tcggctccta tgggcatcac tttgcatgtg   60
tgactgggta cataaggaac gcaaggaaat tattgacagg ggctgcaaaa aaggctgtgc   120
tcctcatacg agatcgcact gtcgccctct tgaaagagac aatcgcccaa ctggacgaat   180
acttctctca caagaggaga ctttcgacat ccccctgctt atggcaggaa cggagtttca   240
gcaaaggtat ggggcgagct gctgaatatc ccctacggca ccacgatctc atacccactc   300
ttgcacgacg aataggaaac cccaaagccg tgagggccgt agccgtgcca acggagccaa   360

```
tcccatatcc atcctcgtgc cgtgccatcg ggaattggaa gcgacaatac gctgacaggt      420
tacggtgggg gattggacaa aaggaattcc tgctttcgtc atgaaatgag tctgccggtc      480
taaagccttg aagcctctcg aaggctattt atatttgagt atatttgcaa gcataaaaca      540
gttatataaa aacaaagtag aatatggatt tcatctttct tcaaggccga ccacaagccg      600
gaggcctgtt cggaggctca agccagatga ttctggtctc gtgctcatgg tagtaatctt      660
ttacttcttc atgatcaggc                                                  680
```

(2) INFORMATION FOR SEQ ID NO:805

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1089 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1089

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:805

```
gcaaagtctc caattcggca tcattcatag cctcggcaag ggcatagcgt tcttggtact       60
ctcaaaagct ttccagccgc tccagtcttg tttggccttg ctctggctac gatctgacgc      120
atcatagaac gggccgaatt gcctcccaag ggctgaagct gtcaaaatcc atcgccaata      180
taaagtaggc atagaaacga cggaggcaac cagattactt tgcagatccg tctcattata      240
ttcgagggat cgaactggtt gtattcgaag ttcagttcct gatctcgcca aatagctgag      300
gagaaaaata ggaggaattg taaatagggc gacgagaagt aacaagagtt cggccttgta      360
ttgactttcg tctttcactt cggtaaggtt gaggaaaaag gtgcagtcga tacgctctgc      420
aaaactgaat gtggccgttg tcatcgagtc aggttgagga gatctgagag ctgacgctcc      480
aatgtcttga tgtctccgca ttggcattac tgccgagacg ttcgctattg atagttacct      540
ggcattcaac tcctgactta cagcagagcc gtatagaaaa acaggcagtc cacaggcccc      600
accacaatct ccttctcatc ccaatccgat tatatagcca caatatcttc ggccacctcg      660
accttgcttt tgagcggata gtccgaggtc ggccttcact gtcgaatatg gtgatcttat      720
tcgtacctac tccaatccgg ctcccgcatc ggaaagcgaa ttcagtacta tcgcatccaa      780
gtgctggctt tcatcttgcg catagcctct tgctccccac tgtccgtctc caagcaaaac      840
ccaccaaccg ctgtcctgca cgtttgagtg ctccgagcgt agcgctatat ccggattagc      900
agtcaagcga agatcgaagt cgcccttggt cctcgtttca tcttttctc tgcctgctct      960
gccggacgat agtcagccac gctgcggaca agacggttat gtcggccttt tcaaaaggtt     1020
tccgacaggt tcgagcatct ctacggcact ttccacatcg atacggtcta tcccttcgca     1080
gttgtctgc                                                            1089
```

(2) INFORMATION FOR SEQ ID NO:806

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 569 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...569

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:806

```
ggatcccctt gcataacagt tgtttgcttc gtgcctatct gtgaatggag cgcgcaacgg      60
aaataccgga ctttccatac agagaggaaa gggtagaaca gcaaaaagca gggtgaaaaa     120
tagtcgtttc atctttttgt cttatttttg tggaaattat gattgataag cccttctttt     180
cccttcatcg taaatgatag tcgtcccata aaggggggga taagggatga ctaaataatc     240
tttgcatcac ggtctccata tctttccaaa ctaaaggcaa tggaatttta ttgcctttct     300
tcgattcttt gctgtttta gtgttatgat tatagcttcc tgcaaggaaa cacatttttt     360
gcttttcaca aggctgataa gtcttgattt tttgtttttag aaatttattt cttcttggat     420
tttgctcgtt ggcattttat gtactctgtg ataccacttt atatcggtct gaatctctgc     480
ctgtgtggat ccagaaaggt ctgattttct atataatcgt cccttaaaaa acccgaatta     540
gccgagatgc catgggaata atggatatc                                        569
```


(2) INFORMATION FOR SEQ ID NO:807

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 528 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...528

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:807

```
cggcgatctc gccggtttgt gtcaggtcga gcctgcctgt ggcaacggta tacgcgtatt      60
ctccgtaacg cgcttcataa agagcaggat ggccaaaaca gtcctatctc tatggcaacg     120
gtcaagtcga ggatgacggt aagcaagaag taaccagcat gacgaggcta tcgctgcgag     180
ggccgcgacc gatattgcca ccgaacgcca tccgctcata ttgtaggata ctatgatcag     240
tactcggcca aacaagccat cgggatgtat gccgtcagag gcccgaggaa cagcggatca     300
gcagtaacac gaaggcgtgt atgatccctg caatgggaga gcgccgccgt tgttgatgtt     360
ggtcatcgta cgcgctatgg ctccggtgac ggaataccac cgaagaacgg aaccactata     420
ttggccgcac cctgagcgat agctcggtat tgctgttgtg cttttttcccc tatcacacca     480
tcgggctacg ttggctgaca agcagagatt cgatagcttc caacaggg                  528
```


(2) INFORMATION FOR SEQ ID NO:808

    (i) SEQUENCE CHARACTERISTICS:

```
            (A) LENGTH: 653 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...653

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:808

tccgtgtcga tgcgatccat tcgaattttg gccggagtaa cctctccgat atcttcttca      60
tggcagccat atagttgttg atcttggtgc cacctccatg agaataatgc cggcgccgat     120
atcttcaagg aggcctgaga ggcgtagatg ttgaggtagt tggctgtgat ttcgtccatg     180
cgagccttgg ccaggcattg acttcggagg agcggaactc tctttcggaa aatttgtcgg     240
caaagtcatg cggaatgatc cgttggactt attgtcgttg atcatcgaca cgtgttgagc     300
ttcatgttct ccgcctcctg ttctgtcagt cgcaggctgg tcaatcgcgt gtgacgttat     360
aacctcccat cggaagtacg cgaagcatgg ccacagcctg tttttataga tagataccga     420
tgtacagccg gcacctatat tacgtagcaa catcccaatg tcaagctcgt cgtccgaaga     480
gcaatacctg gcttcgcaaa gcggtgtgac gaggatgcct gtcaagcgca atcccagact     540
tcttctatgg cgatgcggat attctgcttt accgaacggc gagcagtgtc aattggaagc     600
cgggcttcaa gcttcatgac aaaatacttc cttggccgta tcttcctgtt tcc           653


(2) INFORMATION FOR SEQ ID NO:809

     (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 626 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...626

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:809

cggtatgggg caaggtgccc aaacgtcagg gtacaggtta cgctttcgaa atactgccgg      60
agcacgaccg aaacaggacg tcggctttaa cggacttaga cggcagagga aaaagacttc     120
cctacatata cagagtacat atcccgctgg cctcgatcgt atcgccggat gttttgaacc     180
aatggagtac agatccttca gtccgatcaa cgatccggga ggggataact tccaccacta     240
tagagggcag attacgatga ggcacggaag tctattctcg atcgttataa gcagataacg     300
gagtggaagg caactcggcc gaagccacta acaacattac cggtacaacg tgtccagccg     360
```

```
tttggtgccg gatgtggaag acatcaatca ggcaatacgc tcaacgagat agagaagtat      420
ttccagtacc cgtgtggagc tcatccctct aaaatggttg tggggcaaaa ctatattgtc      480
gattctcgca caaagaggta gagttgcgca acggtaaaaa ggaaacgata acctggtata      540
gttcaaagtc cccgtgcggg aattcgagag aaagatagga ggcattacga cttcaagacc      600
attcgattca tgcgtggtct acctga                                          626
```

(2) INFORMATION FOR SEQ ID NO:810

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 595 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...595

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:810

```
cgtcccttag caggctgagg cactccggta aaaccggcac cgatcggctt cgatatgcaa      60
gcaaacgtct gaagcctctg ccagcccctt ggcatgtcga gcaaaccgaa acccgtaata      120
tcggtggcac cccttatccc gtatttcgca tcaactccgc ccctgctcta ttgagcaggc      180
acatctgccc gatggcgcct cataaacttc actgccgata agccccaaac ggtgggcagc      240
catcgtacgc ctattcccag cggtttggtt aggacgaggc attgccctgc acgtcgccgg      300
catttgtgac cagatgctcc ggatgcacta tgcctgtaac ggcagtccgt acttaggtat      360
gggatcgtct atcgtatgcc ctcccatcgt aaggcaccac tctcgtctat cgtctgctgt      420
cctccacgga gaatagtncg caagacctct acgggaatcc cttcggaggg gaacatggtc      480
agattgagta caacagcggt cgcccttcca tggcatacac attcgagaga gcattggcac      540
agctatgcga ccgaaggtat aaggatcgga caaaccgcgg gaagaaatcg gggta          595
```

(2) INFORMATION FOR SEQ ID NO:811

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1492 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1492

```
tgaaagattc aaaagtgact accgggtcct tttgccggcc agtgaagaaa tctatgtcga      60
agaagaagcg tttcccccttc ttgcgcggta ccgatgcgcg gcatcccgaa tgtccgacac     120
ccatattgaa gaacggcgaa cgtgaagaaa ncgaagatgt agtcgtatac gataccagtg     180
gcccctatac cgatactcct atgaggtgaa tctgcaccga ggcgtaccga agatacgcga     240
gcagtgatag aggatcgggg cgatacggtg cggctcgaag ggctcagctc cgaaacggac     300
ggataaggca gtcggacgct tcgctcgaaa agctgcgtta cgacatgtgt gcacgcgtcc     360
ccgtgccgcc aaggacggct gtgccacgca gcctactacg cccgtcaggg gatcgtgacg     420
ccggagatgg agttcgtggc ctccgcgaaa atcagttgat cgatcaggtc aggacgcgct     480
atcgcgctga gagggtgagc cgctcggagc tgttattccg cgcaagatca cgcccgaatt     540
gtacgcgacg agattgccgc cggacgggct atccttccgg ccaatatcat catccggaaa     600
gtgagccgat gatcatcggg cgcaatttcc tcgtcaaatc aatgcgaaca taggcaattc     660
gcccatcagc agtaccatcg aggaagggtg gaaaaggccg tctgggccat acgctggggt     720
gccgatacgg tcatgatctc tccacggggg atcatatcca tgagacgcgc gagtggatca     780
tccgaattcg cccgtgccca tcggcactgt gcccctctac cagacgctgg agaggtgcag     840
ggcgatgtga cgaagctcaa ctgggagata ttccgcgata cgtcatcgag caggccgagc     900
agggtgtgga ctacttcacc atccacgccg gctgcgttgg caccacgtgc ctctgacctt     960
gcgccgcctc acggggatcg ctcccgcggt ggttccatca tcgccaactg gtgcaccacc    1020
cacaagcgca aagtttcatc tacgagcatt tcgaagagat ctgccaaatc ctcgcacgta    1080
cgacgtagcc atatctctcg gcgatggctt gcgcccgggc tgcatcccga cgccaacgat    1140
gctgcgcaga tagctgagct gaagacgctg ggcgaattac cgagatcgct tggaagtata    1200
acgtgcaaac cattatcgaa ggaccggaca cgtgcccatg cacaagatcc gcgagaatat    1260
ggagattcaa ctcgagcctg ccatggcgca cccttctaca ctctcggccc gttggtcagc    1320
gactggcgtc cggctacgac catatcacat cggctatcgg cgcggcacag atggatggtt    1380
cggcacagcc atgctctgct atgtgacgca aaaggagcat tgggtctgcc caaccgcgaa    1440
gatgtacgtg aaggtgtagt aacctataga tggctgctca tgccggcggg ga            1492
```

(2) INFORMATION FOR SEQ ID NO:812

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 556 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...556

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:812

```
ggatcagtac cgatgaagaa gagataagtc gacttgagca agaagtcttg ccttttataa      60
agagattgag gcccaagcat cgttgctgac cgaagaacca ttcgggcagc ctccgctttg     120
gaaacttctt tgtgcgaatc cttacgcagc tcaatatgcc tcatgtccgt tttgtcgttg     180
atattcgctc gacagatacg gccctcacgg agcagacaag gtcgtttttt tgtttttcggc    240
gaatagcaga tggagccgga gccggtatcg gagattgcct caggaggaga gattctcgcc     300
tgatgttgtg tctgaaagct ctcattgcag acaagcgttc tttccggcca tcgttttcga     360
tgagatagat accggcgtat cgggtgaagt ggtgaccgta tgggagagat tatggctcat     420
atgggacaag gtatgcaagt gtcnccatca cgcatctgcc caaatagcag cccgagggga     480
acggcactac ttgtctataa agatgaaaca ggcgaacggg cacgcacctt cattcgtgat     540
```

gactccgaag agcgaa

(2) INFORMATION FOR SEQ ID NO:813

     (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 311 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...311

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:813

```
gccttaacat tgaacaatct aggtctatta tacagcaata acaatgagca aagcaagcga      60
aagactgcca tcaagaggcc ttggtgataa gaagagaatc gtaaaaaaaa gtcctcaggc     120
ctacaatcaa gacttggcta tgacattaac aatttaggcc ttttactcgg caaaaacaat     180
gaattaaagc aagcgaagat tgctatcaag aggctttggt gaaatacaga gagcttgcaa     240
agaaaatcct caagtctata acccggagtt agcctcagta ttgaacaatc tggggtctta     300
ctcaacgata a                                                          311
```

(2) INFORMATION FOR SEQ ID NO:814

     (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 566 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...566

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:814

```
ggcaaccact gccttcggat agcgttgcag tacttctgcc gtattcttgg aagcggattg      60
ataaagcgga agtgagccaa agccactttc ttgccggctt gcgcatacgc tccattgtct     120
catagaggtg gccataggta ccgccccacc gatgatcaaa agctcggcat cgtctttatc     180
gccgtgtact tccaaacagg aatatcttgg gcaatagctt gaaccttggc ttcacgcgta     240
gcgacatctt ggcgtgattc tccggattgg tgctgatggc atcggtcaca tagtcttctc     300
```

```
caaaccgcccc aaacggtgct ggaagccttc ctgtccgggg atacccaata gcgaacgtgg    360
gtctcttcat ttctgaagta aggtctccat ttgcttcgcc cttatactga tccacgtagg    420
gaggacggat atcgggatat gttgggggatc ggggattctc catgcagagg agccgttagc    480
gatgaaagca ccgttagcag gataccggtg tcatatgctc aaagctatct tacatgcccg    540
aaagcagaag tcgaagcagt ctgacg                                         566
```

(2) INFORMATION FOR SEQ ID NO:815

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 458 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...458

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:815

```
ggagaagcct cccccgatgg agttcgagac aatggttact tctactacag atggcgatag     60
cccttatcgg aggagtactt atgacccttt tgatgctgtg gccaaaggtc ccttcgtgac    120
catgttcagt cgcaatagcc ccgaactgtg gacttttact atagtatcgt ccccttgttc    180
gtcttcatgc tcttttgtct gtcttcgaac tctacgccac acaactgatg cgaatagccg    240
tgcccagctg atccgcgagg tagtgctcag gctgatgctg atcgtcgttt atctctctat    300
gcctttcgat gggtcaagtc tggaagtttt catcgccata tttttgcagc ctatgccgca    360
tgtatgctct tgctgttggc ttatatccgg cgatcggcaa ggtcaatctt cgtcacaatc    420
ggggctttct gacaccggag cgaagcgcaa ttttctcc                           458
```

(2) INFORMATION FOR SEQ ID NO:816

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1297 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1297

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:816

```
ggcatccgtc ggacgaagaa gccaagtccg tggtcaagaa tacatggttc atctcggtgg      60
taatagttgc gagcaaatcg tattttgtct caagcgtatg ccgagccgtg taagaagcat     120
gtggacaaca acttcaaatc cgctgccaag gtctgtgtat ccgaatttct tgctgcacgc     180
gaaaaactca ttctcttatc aaagaggcca agctgatcgt gtccaacgaa acggatgaga     240
tcttgatccg atgacttacc gcggcaagga catcaagaaa gagctaaagc agctcgcaag     300
acacagctta gccgcattca gcaggggggcg agcagtctga agattctctc gtctatctga     360
atctcttgca ggagtcgcag cagttggtga attattggac gatctgatcc acgccacgga     420
gaagctgttc gaccccgtag ccggatcggc acggacgaag aattttttcaa ctgacggccg     480
atagctctgt ttttcctcac tgtgcatccc cctgataaag ggtcttccga atacattaaa     540
ggatgtaata acggaggatc agggataaat aattgataaa agcttgtgaa gagaaaaaaa     600
atgccttact ttgcaacccg attatgaccg ctttatgtgc tacaagcagt cctaacgaac     660
tggaacgata ataaactaat aacgaatagc aatgtcaaag atttgtcaga ttaccggcaa     720
aaaggcaatg gttggaacaa cgtttctcac tccaagagaa ggacaaaacg agtattcgat     780
gtcacttgtt cagaaagaag ttctattggg tagaacagga ttgctgggtt gtttgaggat     840
atcggctgcc gggctgcgcc tcatcaacaa aatcggtctc gagctgccat caagcgcgcg     900
gccgagaagg gcttcttaaa cgcataatca aggagaattc tgtcatggca aagaaagtaa     960
aaggcaatcg ggtgcaggtt tccttgaatg caccgagcat aaggagagtg gtatgccggg    1020
tatttctcgt acatcaccac caagaataga aaaaatacga ctcagcgtct ggaactcaga    1080
agtacaaccc catcctgaga cgtatgaccc ttcataagga aatcaaaaat aaagaggaga    1140
tcagacaatg gcaaaaaaat cggttgcaac atttaaaaag gtgatggccg tacctactcc    1200
aaggtaatca agatggtcaa gtctctaaga cgggtgccta taccttccag gaagaaatgg    1260
tcccgaacga agcttaaaag acttctttaa gtaaggt                             1297
```

(2) INFORMATION FOR SEQ ID NO:817

     (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 532 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
         (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
         (A) NAME/KEY: misc_feature
         (B) LOCATION 1...532

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:817

```
gtccatttgc attggcctcg gtaacaaaag ctccgttggt gtctttcacg tattcagacc      60
ccactcctgt gcttcgtcgt atttgttgct ggccagggaa gaccggcttg gagctggaag     120
gacttgtatg cgaccttacc ttccagatga gaccgaatac tttggctccg ctaccgttga     180
tacgcgtgta gcgtttatgc catcgtgctg atcaggctgc tcctcgttgg tgaatacatc     240
cagcaacgag tatagaagcc ttccacaagg aagttggtct ggacgttacc gaaagatgat     300
acatatcggc actcaaactg aatgcatgag aaatttcagg cttaggttcg gatcgttgaa     360
tactttctgt gcctcaccgg ctacaacccc tagtgcaagt cttcatcgaa tacctgcggt     420
gcgcggaacc cttttgcata tttagcgcgc aagttgatgt cccggattca cgtttgaaac     480
gcattgtggt cgaggactca gaatcatatc cttgacttcg ctatgcttgt cc            532
```

(2) INFORMATION FOR SEQ ID NO:818

     (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 2065 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...2065

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:818

```
ggactgactc atcgttatcc gggatcggtg tattgttcct tatcacgggc caaatgttcg      60
atgtactgtc gtcattgtac ttcgccgtcg cttcgcagac agaaagatgc ttcttctcct     120
tctgagcgca tcgatcgatg cattgacata tagccaatac accgacagtc cgcgatgttt     180
tgctatcggg aggcgagccc tccttgtcag cgacgaacgc ttggaataca tattgaagcg     240
tctgccgaaa tacctcatgt ggagattgtt cgtataggaa gccgtacgcc ggtatccttc     300
ctcagcgtat aacgcctcaa ttggtggata tgctcaaaaa atacatccgg tgtggctgaa     360
cactcacttc aaccacccga atgaagttac cgagaagcag tagaggcttg tgaaagaatg     420
gccaatgccg gtattccgtt ggtaaccaaa cggttttatt gcgtggaatc aatgattgta     480
cacatgtgat aagagattgg tacatttgct ggtaaagatg cgtgtgcgtc cttactataa     540
tatgtatgcg atctttcgct tggaataggt catttccgca cgccggtact aaaggaatcg     600
aaattatcga aaatttgcgc ggacacacct cgggctagct gttcctacct ttgtggtaga     660
tgctccgggg ggtggtggta agatactgta atgccgaact atgttgtatc tcagtcccca     720
cgacatgtgg ttcttgcaat tatgaaggtg ttatcacaac ctatacggag ccggagaatt     780
atcagaggag tgtgattgtg aggactgtcg agccggtaag cataaagagg gtgagctgca     840
ctttccggag gtcagcagtt ggctatcgag ccttccgact tactcgcaaa aaacgcaagt     900
ttgataagaa ctgattgaat gaaaataagc tcctcccctt tgcaaagcca ttggggagag     960
agtttgctta aagagagaaa agagaaaaaa ttgccttttg tagaaaaaat tatgcagagc    1020
cggagcatac cattttcggg atggagaaga acaccggcaa aacagaaacg ctcaactaat    1080
tatcaggcga ctcgatgcct atcggcatag ggttgccctt acttctaagg catagatggt    1140
gaaaagagtg accaggttac tcagacggcc aagccgaaat agtggtacct aaagggatga    1200
tatttgttac ctccgagctg catttctaca aaaagaactg attgcagaga ttattgatgt    1260
cagcgaagat cggatgcgct gggacggctc atcacggcct gctctttgga acccggtaaa    1320
atttgctctc agggccttcc acgacaggag ggttaagaaa aatgataact acctatcgaa    1380
ctccggagtg caaacgacta ttgtagatgg agctctttct ccaagtgtct ggcatctcct    1440
gtcgttaccg atgctatgat tttagctacc gagctgcttt gtccatcaat atacctcagt    1500
tggtccgtaa aacggctgcg tgtatcaatt gatctcttta cccacagtgg aatccgaatt    1560
ggcagagaat tagatcccat cgaacaaggc atatggggga tagacgaatc gggtaacttc    1620
acgacttagg gattcgttcg gcactgctgt tgaatgcatc taacagaatg acctaactcg    1680
cttcggcaac agaatttatg tgtccggggc cgttatgata acttattgga acagcttcgc    1740
ctctctgatg ataaaatctg tctctcatca gagattttac acgtatgttt gctttgccgg    1800
aagcagtaga tcgtttctac agagcaaaca tgagatcaaa tctctgtatg gaggtaagct    1860
atggcccgtg acaatcaatc cggtagcacc cagcgggtac aaactgaaat cgaagtgctg    1920
cgcagagaga tggaaaaagc cctcggtatt ccggtctacg tgtaagaggg ttaaacacgc    1980
ttgaatgttg atgaaactac cgggaacagt aaatagcatt agtggctttt ccctatgtaa    2040
taaaatgagt tgggccatca ttcat                                         2065
```

(2) INFORMATION FOR SEQ ID NO:819

     (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 564 base pairs
            (B) TYPE: nucleic acid

```
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...564

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:819

atccccagcg catcagccgg atcgatgttg ggatcacgta taatatcttg agatgccact      60
gggcattatc gatccaattc ttcaaaaaca aataatgccg atcgtttgag gccgatatgg     120
attgttgcac ggtgcgtcta cgctgtcgtg acgttatagg cctgaatagc ctcgccgaaa     180
atcctattgc acaactgctg atagtcataa ttattattgc cgcttaattt gtcaaaatta     240
taatgtatgc ggacaaagat atataaaaaa ccgattggcg aactctgaga attagtcctc     300
caatcggttt tgtaaattgc taaaaagcaa caataatttt aatagtcttt tttgactctc     360
tttttattg cttatcagtt gccttttcgt gctcttggcg tgcgggcaat ttcctgcttc     420
agctttgcct ttgccttcgc agatttgtgg ccgtgcttgc tcttgcactc gccttttct     480
gacttgtggc gtcacttttt ttgcagtctt tggatttgtc cttgctacaa tctttgcgtg     540
gcatccttgg ccttatcctt acag                                           564


(2) INFORMATION FOR SEQ ID NO:820

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 426 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...426

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:820

tagaggatcc ccgcttatgg gacgaatgat gggtagtatc atcaagggga tccctccaag      60
atgcgtcccg tggcagatga gttggccgct ctcggacggt cagccagatc gggttcctta     120
cttattgttt gcggctcttt cgcgagtgta tataagtaga gtaggggttg caaaactgaa     180
ctacctctct cccgagaaga atccttcgtc gatatgctca gtggaggcat tacgggacag     240
aacatcgacc ggtgatggag gaggtggagc tggctatccg tcatattcgt cagatggaaa     300
cggtcggatg attttttcg atctcctcct ccgccttacg gccctcttgc ccctgctctt     360
cgtgccaaag gccttaaata agcaaccctg tcttccccct ttatacgggc ttgtacatag     420
                                                                     426
agggag
```

(2) INFORMATION FOR SEQ ID NO:821

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 582 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...582

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:821

```
gatggagtcg gctcaagcca aactctattg cgccgaaacg gctatggatt gactacgaaa      60
gcggttcagt tccacggagg atatggctat actcgtgata tccggtagag cgtatgatgc     120
gcgatgctaa gatcactgag atttatgagg taccagcgaa gttcaacgct tggtaatcgc     180
atccaactta ttaaaaaatc aagcattaga ctatgaatat cgttgtttgt atcaaacagg     240
tacccatact accgaaatca aattggatcc tgtaaaaggc acgctcattc gtgaggtgtg     300
cccagtatca tgaaccccga tgacaaggga gctttggaac aggtcttcgc ttcaaggaca     360
cacacaatgc tcacgtaact gtgatcacca tggaccgnca caggcagaag ctatcctgcg     420
cgaagcatat gccatgggtg cgatcatgcc atccttgtca gcgatcgtaa gttcggtgga     480
gccgacacat ggccacaagt tacacactct cttcaagctt tgagaaagat cgaccacgac     540
tgattatcgc cggcgtcaag ctattcgacg gtgatacggt tc                        582
```

(2) INFORMATION FOR SEQ ID NO:822

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 549 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...549

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:822

```
ggacgtattc cgctcaatga aacggatcgc tcgcccaaag cgagtgtaga ttttccatgc      60
gtgggactcc tacggatata gagaagctgc agcgcaactt atggaaatgg cttctcagct     120
caatatggat atttcgttcc agcgggaagc atgttccgtc gcatgcgtcg tctcattttgc     180
```

```
ttcgatatgg actctacctg attcagacag aggtcataga cgaactggct atcagagccg    240
gagtagcgat cgggtaaaag ccattactga aagtgccatg agaggcgaaa tcgatttacc    300
gaaagcttcc gccagcgagt ggctctgctg aaaggacttg atgatctgtg atgcaggaga    360
ttgccgaaag tcttcctatt accgaaggtg tgagcggcta atgaagatcc tcaagatggt    420
aggcttcaag atcgctatcc ttcgggggga ttcatgtact tcggcaacta tctagccaag    480
aagttcggaa cgactatgtc tatgccaatg aattggaagt aaaagacggt aagctcacgg    540
ccgatatgt                                                            549
```

(2) INFORMATION FOR SEQ ID NO:823

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 524 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...524

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:823

```
gggcttcctc ttttcgtgaa acccaatgtg ggaggttcca gcatcgcgat accaaggtgg     60
tggaagctgc acagctcctt ccggcaatag aacaagcctc tcggaaggcg aagaggtaat    120
gatagagcgt ctgatatgtg gtaccgagtt acctgcgggg cattcctcag aaaaaaagaa    180
gtggtcgcat tgcctgtaca gaagttgtcg cacataatga gtttttcgac ttcgatgcca    240
aatacacgga gctgtagagg aaatcacacc ggcgagaatc agcgatgaag ccaccgattg    300
atacagacca tgactgcgcg catatacgag cttctcaacg ctcgggcatc atacgtgtgg    360
actatattca tcgaagcgga tggtattccc acctgctgga agtgaacacg acaccgggca    420
tgacccctac gagctttatn cccagcaggt tcgagcagcc cggaatggat atgaaagaag    480
gtgctttgca tattcattcg ggatggactt gaatgagacc caat                     524
```

(2) INFORMATION FOR SEQ ID NO:824

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1165 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature

(B) LOCATION 1...1165

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:824

```
ggaagttggt cagaactcca ctgataatgg agtccatctc tgccaattcg attcgtgttg      60
gctgtttact gctgcaatag agtcatactg cattttcact ctttataggc actggagttt     120
tttccacatg ataccaaggc aagagttgcg ctgtggcgat aaacagtttc ttcttcatgt     180
tcgtaatact tttattgcgt gacacttcat tcattcttaa cttattgctt ctcttctttt     240
ctcccttcgg ggcggctcca cccacgatga gaacgaattc tccccttgga gggtgttttc     300
gaagtgagcc agtaattccg cgagtgttcc gcggatcacc tctcgtggag tttgctcagc     360
tcccggcatg cagcagctgg tcgatcgaga ccaaagtctc cacaaattgg gtcagagtcc     420
tgagcacccg atggggcgac tataaaatat catcgtccgg agctcttcgg ccaattcttt     480
cattcgagtt ggcggccttt cttgacaggc agaaaacctt cgaaaacaaa cctgtcggcg     540
ggagtccgct tgctaccaaa gccggaatca atgctgtggg tccgggcaac attctaccac     600
tacacccaac tcggcacatg ctctgacaag caaaaaacgg ggtcgctgat cccgggagtt     660
ccggcgtcgg agatcaaagc tatgcgtcac ctccggatat ccgttcggcc aatgacttgg     720
ccgtacgatg ttcgtgaatt tatgatggct ctggagcgga cagtgaatgt cgtaatggtg     780
gagcatacac tgctggtacg cgtgtcctct gccaaaatca ggtctgcttc gcgagtacct     840
tcaaggctct caaggtaata tcctccaaat tgccgatagg agcggcacga ctgtcaaacg     900
tccttccatc gcaaatccta cggttcagtt cttctacgga agaaatccga cactacttcc     960
gcaaagtcat ttaccaccgg tcctctgcct cccattgcat ccgctgatgc aaatagatca    1020
tagcttcagc gctgacgaca gcaatccgag atgggcagag atgtctcgca taagcttgca    1080
tcgtcttgaa acaactcccg tctaaagcga aaaaaatcca acgtagaact atcttctgca    1140
aatcgaagcc tgcaggagag gtctc                                         1165
```

(2) INFORMATION FOR SEQ ID NO:825

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1008 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1008

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:825

```
gatctatctt gatgtccaag tggagttctc ccgcgtttgt tggcctgagg atcacctctg      60
ggcatatttt tccggcatcg aatagagtg cttcggaggc tggtcatgca ggtcttcgcc     120
gaagttgcgg cgaaactcgt ccactctttt tttcagcttc tctgccggag cttcgttatc     180
ggcatagagg atattcccac ccgtcgatct ccctccgtaa ggcgaagggc caaccatctg     240
ctattggcgt atcgggatga aagagccgga tggattcggc caaagaatcg atcccgtatc     300
tatttcagta ccgatacttg tcagtcgatg cggagtacag cgaatatccc ttgggccacc     360
tcggacaggg ccgacaggag atcggatatg cctctcccga acgtgcactg gctcctacga     420
cagggatgcc cagcctgcgc ggagacctct caggtcgatc tctacgccgt tccgttcggc     480
ttcgtccatt gattggcaca taggacggca cgatccgtta tttcgaggat ttgcaggata     540
gattcatatt ccgctccagt cgggtagcat ctgccacgat gagggtaaat cgggcttgcc     600
gaagagaatg aagtcgcgag cgatctcctc atcctcgagg tagaaaggag agaataggtg     660
cccggaagat ccactatctt gtatgagagc cggcatacga gaatgcacct tcggctttct     720
ctaccgtttt cccggccagt tgcccgtatg ttgtttgagc ccggtcaggg cattgaatac     780
```

```
cgtatcttgc ctgtattggg attgccggca agggcgatgg tgaagtcgta tcgtccgcat    840
cggtgcccat gcgccggagt ttatttccgc tgtgtgcggg gcacccgttg caggctgaag    900
aagtggtagc actctttttc atcattcgat tgaagttggt ctgaacgtta ggtcttttac    960
ctggatataa ggatataacg gcttgatcgc gtcgcaaggc gatggccg                1008
```

(2) INFORMATION FOR SEQ ID NO:826

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 499 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...499

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:826

```
cggcatcgtt ctgtagcgac aggtacgacc atacggctac ggggatagtt tggctttgca    60
ccaaattctc ttttaatcat tcgactgacc tctcgataat gaggagaagc catttcatga   120
accgcacata tccgaaccgg ctttcaggag taagatatac ggtgaagtat atggcttctt   180
gctcaatgaa atccaatttg ttacaaatat actgacagac agtgattcta ccaaagcatc   240
cattcatata tttccggctg tgagtgcaac acaataaaca aaggccggtt agagtcgaag   300
ccggatattg gagcggattt tagtagtttt gcgctccgtt agaatactga atataaggat   360
gtttcaagat ccaagaaacg atcgtcaagc ccgacctctt cgacaagtat tttgtctgcg   420
attatgctac gtgtcagggg attgctgcgt ggaaggagaa agcggtgctc ctctcgaagc   480
gggtgaaagc gattttgct                                                499
```

(2) INFORMATION FOR SEQ ID NO:827

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 539 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...539

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:827

```
ggcaatgaca atttgcaaac gataacagtg cgtcgcaata tggccaaatc agcttggcca      60
tgaataccgc caagctgaca gaggtggagt actctcttat aacacctttg acaaaggcac     120
cttggctcca ttcgacccct ccgaaacaat ccagacttag cattcaaaaa agattttgtg     180
accgagccgg ccggagtgat tttgataatc agaaagggtt caaacctgtc ggtcctgaga     240
atttctttat ggtttcgagc gtaaaaattc agttattgct gcgggagaac aaattcttgc     300
ctgatcataa aaggcaaata tcaaggtagt aatgcctttt cttctacaag atagactttg     360
tccatcagga cgacaagacc aagcgttacg actcatacgc aatcacttct ataaggtgac     420
gatcaatgat gtatttaaag cggatttccc acaatcgagg cggctctttc aggtgctgct     480
gcgaacaaca agctctctcc gaggagctgc aaatgtaccc cgtctttctc tgacggaaa      539
```

(2) INFORMATION FOR SEQ ID NO:828

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 529 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...529

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:828

```
gggttcaaag agatattggt accggccgat aatttccggc aggaggatgc ggccgcttcg      60
gtattcggct cgtgccggtc agaaaggtgg aggaagcctc cgccatctgt tctcgaaagg     120
aagagaatag aaagaacgga gaaaacacta tcaggagaga gctacaattt ccaaaaacat     180
acaagtaata atgaaaagaa caaactattc cgtatcggga tacttgccat cgttgccctc     240
ttgctacagg atgcaagggg agccgatacg cattttatca ccgatgcaga cttcgcaaac     300
aggtgcaaga agatctgaga gtaaaacgcg aagctctatc cgaggcaatc tcttcgaagt     360
gctggagcgc gattcgctcc gtaccgaaga gccgaagcac tggagttcct gtatgcctac     420
atgacttctg ccggacatcg tgactactcg ggcgacttct acttgcagaa tgtacgcgag     480
agcttccgcg aagaagaaga atgtcgtggg gtaaggaagt gcccgactg              529
```

(2) INFORMATION FOR SEQ ID NO:829

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 433 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

```
cggagcgcag ccgatagccc gcttcaccca gaaactggat cagcccaatc cgtaaccttt    60
gtaggcaaag gcaaattgga tgagatacgc gcctatgtca ggagaacgag atcggcatgg   120
tggtgttcga cgacgaactg tcgcccagca gctgcgcaac atcgaaaaag aacttcagac   180
caagatcctc gatcgtcggg tcttatcctc gatatattcg cccgacgggc acagacggct   240
catgcaaaac gcaggtagaa ctggcgcagt accagtatat gctgcctcga ctgaggggct   300
atggacccac ctcgaaaggc agcgaggcgg tgtcggcatg agagtccggg agaaaagcag   360
ttggagacag accgccgtat cgtctttgga caaatagctc ggctcaaaga agaacttaag   420
ggacatagac aag                                                      433
```

```
tccgaactta tggctctgag gtaactccac ttgtcgccca cagtgcggag agtcttctct    60
ttaccatcga aaacgatggt cagaggttcg gccagaggtt cttctcatcc accatcaggg   120
taatgagtac atagtccttt tccagcagct ctttactgta ggatcgatcc aaacggcatt   180
ctccatcttt ctacagtcac gcagccgtga cctgagaagt cgaggaggac aggtttgttc   240
tcctgcgagc aaaagccata ccggcctcat aatccgtaaa gtgagcatga acttgccact   300
atagagattg aaatcctgcg tgtggagcgg cggagcaaaa gcattacagc cttgagcgga   360
gcccccaca aaccggggat catatataca gcaaagccaa agagacagta gccatcataa   420
agcgcggcac agagagatgt gccattcgct atcatggctg aaacggatcc atcccaagag   480
atagcaaccg gcagagcgaa aatgacaatc cagagagcga ggaaagtctc acgatcgaga   540
tatgccagcc atatgccaag tctgccacgg agaggaactt gagagcaaag ccaattcgag   600
gaagccgagt accaccttca ccatattcaa ccatcctcgc tcttaggcat accctgcaac   660
cagctgggga agaccgcaaa aagagtaagg gcaaagccaa tgaagtggca aagccaagca   720
tgcccatggc cggagcagtt tggagccggc tgtagcagcc tgtaccaaga gcgtaccgat   780
aatagaccgg tacaagagaa ggacaccaaa gccagcgtaa aggccataaa gaaatactga   840
gcaaaccggt cgtagagtcc gccttgctgt ccagcttgtt agccaagatg acggcaacac   900
cagctcgaat gctccgaaga aagagatagc gagactacca acagcaggaa gaatatgatg   960
ttgaagaccg cattcgtggc aaactgttca gagaattgac accgaaaata cccgtaatga  1020
gcaagccgac actacgtaga taacgatgat ggaagctccg taggtaaagg catctctccg  1080
gctttcttct tgtccttatt acgcttaagg aagaagctca ccgtcatggg atcataggcc  1140
atacgcaagg agtaagcaat gcaacaaaac cgtagagaaa ccatagagga aaatcttcca  1200
cggagcactc tctgcctgct tgagctatca tcaccgtatg cacgcaactc gctaacaacc  1260
ggtgtccaca agtcgccttg gacgaaagag cttcggcagc atcggtctgc gatgtagtat  1320
```

```
ccgtgcggtc tcggcagcaa ccgcttcagc agcttcagct tcggtatcag gactgcagcc      1380
ttgctcttga tcatcgaagc atcgaaagag aagtcgctcg ttcgggtggc agacagtttt      1440
catcattaca agccatgaag cgaacaccac tttgatagag aatttggcag ggtccgtcac      1500
ctgaattttc tgacggaaaa gacagtcttc tcgtaccatc tcagatccat ttcgaactgc      1560
ttgtcgtacg gttgacagga gctttgtcag gaatagcctt accgacaagt ttggctccgt      1620
cattttatcg aacaggaatt ctgtggatgt agggccatcc tcgggcgatt ttggtcataa      1680
aggtgccatc cgggtttgat cgtggccgta aacacaatgt tttctcaggc gtgtcgctat      1740
cctgaagaga ggttttccaa acgatacatc cttgataatc tgagcagatg ccccgatggg      1800
caacatagag agaacagtag ggctaaagct accgtccatt tgctgtttct gtggttcttg      1860
ttgtcattat tatatgttgg attattaaaa ttagtcagct acctatttgg acgttttttt      1920
gtctttgata ttgtttggtc tgctgcagtg ccttcttcga atgtatcagg cggcgaaaga      1980
gtttgggcaa aggcaactta tattcctgct atctcccgtt tcaggatgac ggaatacgaa      2040
tcgcgttccc tgtagggcag acagtccaga tggcggaaag aactaccctg cctcaa         2096
```

(2) INFORMATION FOR SEQ ID NO:831

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 650 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...650

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:831

```
tagaggatcc cctgtagatt tctcgtcatt gtatagctgt ctgaaaggga taccgctgtc        60
atgttctgtg aagtggctaa ttctccggcc aaagtaataa gcagtttaca aaggatacca       120
aaggagaagg aaagccttgg ctaaaagtgc atacgtgcag gaaagcttct acattgggag       180
ggaaaatctc gatgcttggt ttcgatcaag agcaaaaacg aactcatcgc agatgttgtg       240
gcattctgca gtctccggcc aagaacgtta ttgcatcttt gcagtcagca ggtcaacgat       300
ccatggtgtg ttgaagacct tggaagaaaa ataattcaac agttaattga aaacttttaa       360
tactcaaaaa taaaatggca gacattaaag ctttgctgaa caactggtta acttgacagt       420
aaaagaagtt agcgaactcg cactatcctg aaagaagaat atggcattga gccggcagct       480
gctgctgttg tgtagccgct gctcctggtg ctgccggtgc tgcagctgaa gaggagaaac       540
ttctttcgac gtagttctta agagtgctgg agctgcaaaa ttgcaggtgt gaaagctgta       600
aagaacaatg cggtcttggc ctgaaagaag caaaggactc gtggacgcag                  650
```

(2) INFORMATION FOR SEQ ID NO:832

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1530 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...1530

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:832

```
gttctttcca agaagaatta tcctccaggt cagcatggca ataaccgtct cgtaagacga      60
gcgagtatgg cctccagctt cgtgaaaagc aaaaagcaaa tatacttacg gtgtattgga     120
gaagcaattc cgtcatttgt tccatcggca cagcgcgcaa agggtgtaac gggtgagttg     180
cttattcagt tcttggagca cgtttggata atgtggtgtt ccgtttgggg attgccccga     240
cgcgtctgct gcacgtcaat tggtttccca tcgtcatatt accgtagatg gcaggttgtc     300
aacattcctt cttattctgt taagcccggt caggtgatcg gcgtcgtgag cgttctaagt     360
ccttagaggt tattgctgat gctttgacag gttcaatcac agcaaatatc cttggatgga     420
gtgggatcag tcgtcattgt cggtaagctg ctgcatatgc cggatcgtac ggacatccct     480
gaaaatatta ggaacagctg atcgttgaat tgtattcgaa ataatccata gatcccatgc     540
aatattagca tttcagaaac ccgaaaatgt attgatgatg gagacgtcga ctcgatcgcc     600
aagttcgagt tcaaaccttt ggagcccggt tatggtatac cattggcaat gcgcttcgtc     660
gaatactctt gtcttcgctt gaaggtttgc gattactgca atcaagattg aaggtgtaga     720
gcatgaattt gctacattcc gggtgtattg gaggacgtta ctaatattat cctcaatctc     780
aaacagttcg tttaagcag attgttccta atgccgatgt agagaaagct acattgttat     840
ctctaattcg gaggtgttcc gtgccggtga tttgaatgca cactttcaaa ctttgaagtg     900
ttgaattcga atcttgtcat ttgccacctc gtaagtcggc tacgcttact atggagtttt     960
ccataaataa ggggcgtggc atgtgtcggc agaagagaat cgcgcagagc ataatgagct    1020
ttccacgatg cgatcgactc aatctatacg cctattcgga atgtcaagta tgcggtagga    1080
atttccgcgt agaacagaag actgattacg aaaagctcct gatggaatga ccacagatgg    1140
ttcgatccgt cctgtagatg ctcttcgtga agcagccaaa tcttgatatc ccacttctct    1200
ctgtttgcag agaataagat agcgaagagt atgtggatat agtcgatact gatgagttcg    1260
atgaagattc tctgatatgc gtcaactatt gaagtcaaag ctttcaggtc ttgacctgtc    1320
tgtcgtgccc tcaattgtct gaatgcagcc ggagtagata cgttgggcga ttagtgagtc    1380
tgtcacggag cgatctgatg aagattcgca acttcggaaa gagtctttga ctgagcttga    1440
cgaactgctg gcaacgctga atttgtcgtt gggatggata tcagtaagta taaattagat    1500
aaagactaag aacgatgagc atataggaaa                                      1530
```

(2) INFORMATION FOR SEQ ID NO:833

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 623 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...623

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:833

```
ggccagttcg atattgcttc ggtctgtcat gctctctgcg acaagctgac tatcggcatc      60
cgcatatcta tggcaatgta caggtggaga atgctgccaa gtggtacgca actgggagca     120
actcaaactc cgcgaaaagg atgggaaaag tccgtcctct ccggcgtgcc gaagtctctc     180
cctgctttgg tgaagactat cggatgcagg agaaagccgc aggcgtaggt ttcgactggg     240
agcaagggag caggtatggc cgaaagttga agaagagctg aacgaagtcc gagggctatt     300
gtcagtgaag atcccgatgc catggaagca gagttcggcg actgctcttc gccgtggtga     360
atgccgctcg tctctacggt atcaatccgg atatgctctc gaacgtacca atagaaaatt     420
cgacagccgt ttctcctatg tgagcagcgt gccaaacagc agggcaaagc tctcagagat     480
atgaccctct ggagatggat gcgctgtgga atgaggcaaa acagaaagga ctctgacctg     540
ttccaagcgg aaaaagctat ctttgtaagc acgatttagc attattacat aatgaacgaa     600
gacattaaaa agaatacctc ggc                                            623
```

(2) INFORMATION FOR SEQ ID NO:834

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 753 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...753

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:834

```
agcggggcca aacctttct ccacccttgc caaaaaccag cttccctttt ctaagttttc      60
tattatagca gaaataaatg cattattttc cagctccaag attattccgg gtataatggt     120
tgttgctttt attgttttca tataagatcg accactctat ctgcggataa tttgctctta     180
gcgtaatctg taaattgagc ttacaccaac cttttatcct gtaggctgca atggaggaac     240
aattttgagt ctgcactcag gattatattg attgattgct ttgcaaagat tttcgttcca     300
agaacatttg attgataata ttctttcttt gttgttcgtg aaattgtgcc gccaagtgaa     360
caattacatc ttgtcctttt acaaatctt cggagattcc aagttcgata atctcctttt     420
gataactttg actttatctt cattgtttct atattgctac tttcccttgt caaacaggtt     480
attggtgtgt tgttttgac aataattcaa cgagtctgtt tccaagaaaa cctgttcccc     540
ggttatgcca attcttatca tttttatatc attcataaaa tatttcttat tattatcgnt     600
ctctccaaag agtgtagtag gcgtacngat atccatgcgc angaaagcaa gtatgggttt     660
ttcggcctga ttgggaatcg gagactaact aaaagaactt tttctttttt gtgttttcgt     720
ctgaaattcg agaaagctct aaagactacc tat                                 753
```

(2) INFORMATION FOR SEQ ID NO:835

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1247 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1247

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:835

```
ggctccatca agcggagcac cccaaagagg ccactatcga agctatacgg aggcagaagg      60
ggcagcaaac gaggcttcta cacaggtgtt ttcggttatt cgacggtagc agcttcgatt     120
cggctgtaat gattcgctac atcgaacgct tcccgatggc cattaccttt ttcgcagtgg     180
cgncggcatt accatcacag ccgctgtgac gacgaatacc gcgaaacaca acaaaaggta     240
tatctccatt ctgatcgaat atgtgctata tcgaaaccat ccgcatcgaa gacgcctgcc     300
ctatctgctt gcgctccatc aggaacgaat gagccgcacg tgcacgaaaa gggctttccc     360
ctcccggaaa taccttgcct gacgaatcta tgcctccgga attgatgtgc ggaatgacca     420
aatgtcgtat tctatatggt aggagggcat ttcggacgtt tcctttttcac cttatacacc     480
acgccaaata cctccctgcg tatcgtaacg gctccagccg atttggacta tcatttgaac     540
aggttgaccg ttcgtctctc gaagctcttc tcaagcaaaa aggagaagcg atgaaattat     600
tatcctgcgc aacggactcc tgacagacac atcctaccca acctccttct acatatcgga     660
ggagaacttc tcacaccgcg cgtcccctct tagaaggcgt acaacgccgg tatctgctcc     720
aatccggtca aatacaccgg cagacctgca aatcgaagac ctcaaaaaag cagaagaaat     780
actgtgatca atgccatgct ccccttgggg cataccattc gtatacaccc atccagatta     840
ttttttgatt atcatcttcg gctatcggat cgagttatcc gaagaaggct tagaagaggt     900
aggagatatt gcagatagcc ccgatggtat gccggacgtt cgttcggctt gcggatcgga     960
caggatatgt gagatgacac gggcgttttg ccataggcta taccgtcctt tcttttcatc    1020
aggtcgccaa caaccgcagc tctgtcatca ggcggtgggt attctgcatc ggaatcgaac    1080
gtacagagag gaacgcacct ccacgccttc tctattacga taggcatggg caaataggcc    1140
agctgatagt cgagctgctc tttctggatg gtacgaatct tatacgaatg cgtcagcacc    1200
attcgattaa gcagccgaaa gcgaagtcca aaatccaatt tggatcc                  1247
```

(2) INFORMATION FOR SEQ ID NO:836

        (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 1367 base pairs
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: double
                (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
                (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
                (A) NAME/KEY: misc_feature
                (B) LOCATION 1...1367

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:836

```
ccggcaccgc cggtgatgag aatatgacgt cggaagttca tcgttcttca tgttttagca      60
gattcagaca cgcagccaaa gaatcctgcc agtgagggtg ctgatgtcga aagtgttttt     120
aataagcgtc ttatccaaga cggaatatgc ggccgtctta cttttgtcgg atattcatcg     180
```

```
ctatggcaag ggctgacctg catgctgtat gaccactcat tcgggcaatg gccactgcaa       240
agtcgaccag gagcatacac cttcgttgct aaagtgatac agccccgtct taacggcagt       300
tgtcctatag ccagacggtg tatgaaagca gccaagtccg cagataggta ggagtaccga       360
cctgatcgaa gactacgttt aatgtatcgc gtcagctgtc agccgaagca tcgttttcac       420
aaaattattg ccgaacgatg atacagccac gatgtgcgca gtatcatgta tcggcagtcg       480
gctgccagca agcctgttct ccttttagct tggtacggcc atacgcaccg agaggagctt       540
cgggatgtct ccctatagg ggatattagc cgtaccatca aatacatatc cgtagaaata       600
tgtatcagca gggcatcata cttcgcagca gccgctgcag atgagccgca gcttggtgat       660
tgactttctc ggcagaggct tcatcgcctc agctttgtcc acagctgtat atgcggcaca       720
gttgataatg atcccatgct atattcctcc ataaaacgga ggacagcatc tttatctcta       780
atatcagttc cgctaagtcg gtgaaaacaa aacggctgtc agccgaagcc aacaccgaag       840
ttcactaccc aactgaccat cggctccggt taccagtatt cgttcattcg tataagtctt       900
gattgtaggg gaagagattc cggaaatcct cctcgatatc aattccgtcc atgacggatt       960
ggcctgatct ttagctgaga gataatgtcc tctgcaggga ttttccactc aaatatctaag     1020
ttcggatcat ccaggcaatg gctccttcgc tttgtggagc atagtagttg tcgcatttta      1080
ctgaaatacg acttcgtcac ttagcacgac aaaaccgtga gcgaatcgcg cgggataaac      1140
aactgtctga agttcgtatc ggaaagctcc actgctcata tttgccgaaa gtaggcgatc      1200
caaagcgaat atccacggca tagtcatcac acacccacgt actactcgta ccagcttgct      1260
ctgggcatga ggagtttctg aaagtgaagc cctcttagta caccatatcg ggatgccgat      1320
tcgtgtcttg tacaaaatta atgggcgaat acccgtttct atctctt                    1367
```

(2) INFORMATION FOR SEQ ID NO:837

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 855 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...855

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:837

```
tcagtccatg aagaataggc agcggatcca ctccgacaaa cgaacggcat catcttgtaa        60
gatgggacca tccacgtagt cgttcgggtt cggccgatag taacgatcag ctttttctgc       120
tcctcggcac aagcctccat cacataggca gcgtactgat ataagtaaag aagcgagtcc       180
cgacatcctg catatcaata gcagcacatc gacgtcggcc aacattcgag gagtaggttt       240
cttgtttttgc cgtagagcga aacgataggg attcccgtcc tgacatcccg ttccacttga      300
ccgttgcccc ggcatcggca tctccacgga agccgtgttc aggcctaaga tcttgacgac       360
attgactccc tgccgaagca gattgtcaag aaatgttccc gctccgtccc caccacgctc       420
gtagcattag ccaccagtgc ccacgcttgt ctctgagaag aggcaggagc agctctgtcc       480
tctctgcacc acaactaccc gtacctcctc tcttgggggtt gcgaccgaaa tctcctgctc       540
gaatgagcag tctgactccc gacttcctca ctcctcgacg aatgcgctcc cctgcaactt       600
ggcaaccggt ataggccgaa aacgacatta gcccgctatg caggctaatg cgatagaata       660
tttccggaaa aagcgaggga tcatttcctt cgtttactcg tcgatgatct tccaagaaag       720
ccttcaatcc actatcgtaa gagggtgctt gagcagaccc tttgatggcg ttgagcgggc       780
aagtgccaca tcggcaccgg ctttcgaggc actgaataat gtgctgcgta tggggggatgc      840
tggcagcaag tacct                                                         855
```

                                          t

(2) INFORMATION FOR SEQ ID NO:838

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 687 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...687

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:838

```
gaagccaaca actgttatgc aagcaattcc tgaatacgat gataccggtg actatccaaa    60
agtcaaagta ttgcctgcga gtaaactccc aaacgaaact ccggtttgcg tcataactca   120
gacaagcaaa gggattaaca ttaaggtagg actgttgatg cagtcgatga tgaaaaccta   180
aacggacgaa taataggaat ttttacccca atgatactct tggccccgaa tcggaagaga   240
aactaaaagg ttgggggttt tactctccaa agcctccgaa gatttcgatc ttcgcaaacc   300
aatgaaatat ccatcgactt aactgttttc aaagatttgg ctgttcaatc accgaaaagc   360
attgtaattt atacggtgag acaatctcat acgtgaaaaa atgacactga aaaagggaga   420
cttaatgacc aagccatttt taaaggcctc tataaggtaa aagaataaga gcatggcaaa   480
gcgaataatc cgaggatagg agacgttttt gaagtccaat tagataattg caagaagtat   540
ttcagtacat cgcaaatgac atgacacagc tcaacagtag cgtaatacta cttttgtgga   600
agaatacccc ttggactgtt ctccgatctt agaaaattta cccgcgggta agggtgattt   660
tatgcacata cagtcctccg atgggga                                       687
```

(2) INFORMATION FOR SEQ ID NO:839

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 789 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...789

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:839

```
aaccggctgc catccggcgg atcaactcga caaagtcgga tccgattcga gcatgacgac    60
ttccgtttcc ggatctccca tacggcaatt atattctaca cataaggatc tcctcctaca   120
```

```
ttcatcagtc ccacgaagat gaatccggat aatcgattcc ttcggctatc agtcccgata      180
tcgtaggccg gataatcgct cttccacctt ccgcatgaat gcttcatcgg cgaaaggtac      240
tggcgaacgc tccccattcc gccggtattg agcccggtat ctccatctcc gattgcttat      300
aatctttggc gactggaagt atgtgatagt ctttgccatc ggtgcaacaa atacggagca      360
ttctatgcca tcgagaaact cttcgatcac caacgacggc ttgcagcacc gaatttgcca      420
ccgagcatct cagccaactc cgtttggctt cttctgcagt cggagcaata atcacccct      480
tgccggcggc aaaccatcgg ctttcagtac ataaggagcc tgcatcgtat ctatgaatgc      540
ttgcctgcat ctgtttggtc agccgtgaat gtctgataag cggcagtaga atcccgtgtc      600
gtttcataaa agacttgctg aaatccttgc ttccttcaac cgtgcaccct tggcatcggg      660
ccccacaatg aggagatcgt gcagtggtcg tgatttcgga agtagtccac tatgccacgt      720
acaagggggtt cttcagcccc actaccagca ggtcgataga actcgcgctg taccacttcg      780
gcaacggca                                                               789
```

(2) INFORMATION FOR SEQ ID NO:840

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1914 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1914

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:840

```
ggcgttttat gaaagagtga tttaatgccg tttggtttat tccggtcgca aaatatgtgc       60
agctttttca tggcaaagaa aaaatcatcg aatgttttat ggcttcatag atacagacta      120
tatcaattca ggctttcttt ttctcagaag gattcgcccc aaaaaagtta tcgatcggag      180
cagtataagc atgaaactcc ggcgaaaaaa ggaaagaggg ggaaaatcgc tcgattggcc      240
gagggtttgg cggaaaaagt gcctgtttct ccgtattttt gtcccgtttt gaataaaaat      300
cacacaaatg atcttatgaa acgaaccctt gttttcttat ttctgctgcc gttttggctc      360
ttcgggccga ggcacagtct gcacccgagc aaccgagacg aaggatttca tcttctcgcc      420
ccaaaaggag atggtgtacg tgccatcggc tatccggcag gaatcggatt gccctctctg      480
gataattata cgtagaaggg gcttcggctt cttttgccgt cggctacgaa cggggcgtaa      540
acaactcgca gaagggcttc tgctatccat ctatgcggaa ttggattggc ggcattcaga      600
tctgtatctg acaaaagatc cctgcctttt tctgatgttc tgcgcagaat cggtttcgat      660
ttttagccgg agcaggcgtg cacaagggct caacccgaat atcgaactct atgcaagagg      720
tgcagtaggg gcgagttttt cccggaaaac aacggttcat catcgagaga actaaagggc      780
ggattaacgt tagccttagg tcggactga gttgctcatt gagagacaat ttcccgtctt      840
tatcgatacc gggacatccg acatcgtgcg cggcggcctt gcttgatgtg gtagcagaag      900
cagcgtagga tttaccggaa ggtatgaagc cctactgacg gtcgtttgtg ctattattct      960
cctctccttg cctctcggtg gcagacggtg gtgcccgaat gggatgaata catagcagag     1020
cagatagaac aggtgcactc ggggaggacg agggagccga atttctggaa cggtggatgt     1080
gcagaagcag catccgctgg acatcaatac ccttacccgg gaggactgga gcaattcccc     1140
tttctcaatg agtttcagat ccgccgtttc ctgctcaccg acatgctcat cccgagggg     1200
tcgacagcat ttgggtgctg agtgaattgc cggctgggac agacgtacct gtctgctctt     1260
gtggccgatg ctgaggtgca gaagcggagc gagtcggctg ccgcctcttt tcgcgagatc     1320
ctgcttatgc ccgtcacgat gtatcggtgc ataccgatgc catcctccag cacaggaggg     1380
ctaccgtccg gatagccggc atccgtatcg gggcgatccg tgggtggcgg tttgcgctgg     1440
agctacgcta tgggcaatcg tttttcctta gccttactgc gtccaaagac cggggagaac     1500
```

```
cggccttcga taagcggcga agggcttcga cagctattcc gcccacttct tcatggaagg    1560
gaagggggtg tgcgagccgt ggcactcgga gactatcgaa tagggatggg atacggctgc    1620
tcgtcaatca ggcctctttc atgggaatgg cctacgccta tcctcgggcg gaaccacgct    1680
gcgacgtgcg tttacctatg ccgaggacaa cttcagcgcg gggccgctac cgctcttgca    1740
caaggacgat gggcactgac ggcatttatt cgcgccaggg gatcgacgcc accgtcaccg    1800
aagacggtgc cataaagcca tttaccacac cgggctgcat cgtacngatc cgagatcgcg    1860
cgcgaaacgc tgccacgatg acaccgaagc acttncgtct gctatacgac gtcg          1914
```

(2) INFORMATION FOR SEQ ID NO:841

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 661 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...661

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:841

```
cgatgcgaaa ggttttgccc gtttcgcgat tgactatggc acgaaggagt cgaaattatt    60
gaaggatttg cttactccga tatgctgctc cacgatctgg acgtgaccac tcccctacta    120
tcttgtgtta tgagaatgag cttgtccgct cattcatcaa cttctccaga tcattgccga    180
ggtaatcggc cagcattatg ccacttcggg cgatacgctc agtttcttgc cggcagcagc    240
cgacagatga agtccggcat cttatagtcg ggtatggtct cggacacgaa tacttcccga    300
acttttcagc cttcgtatag aaagcctttc gcttatcggg tttttcttat aggcaatgac    360
cagaatcgta gtatcgggga aagtgccata attgcttcga gcaagtcgat attgtccact    420
aactgcgcct cccgaacgac gtcaactgcc tccggcccat catcgggaaa cggcgcgctt    480
cgttcgctat tcggctacgg aggttttgtc gccgtagagg ataaccctgt tgaaagtcca    540
ttcatctacc ggcaccacgt gcgtctccag cagagtggcc aactcgtcat atagaagggt    600
tctttcggcc ggccagcaga tagaagtggc gaagaatggc acttacgtac agaatcgaca    660
a                                                                   661
```

(2) INFORMATION FOR SEQ ID NO:842

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1086 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS
```

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:842

```
ggtcagtgca gagaccagtg gtgtccgcgt aggcatatcg ggacattgca cctggagttg     60
ctggacaagg atacatccgg ctctcaagta acagcccgat gaaagccatg atatgggctt    120
cggactatgc cacattatca ggacgcttca gagagaaacg ggcgaaacat tcgattccgg    180
tctccacgtt ctggtatggt aagtgtatcc taccatgagc aatatggact aagccttcgc    240
attctgacat agacccctcc tacacaatgg gggctatggc tcgcaaacgc aaaggatcat    300
cgaagaactg cgccggcaag gtctatacga cctcaatcgc agctgtccct accccgcccc    360
acccaacgca ttgccatagt ctcatccggt gcgctgccgg cttcgaagat ttcatcgcac    420
accttagcca ttcggccgag ctttctgttt ctatcccgtc ctcttccaag ccgtgatgca    480
aggagcacaa ccgaagcatc ggtgttggga gctttggagc gcatcgcata tcaccgggat    540
ctttcgatgt agtggtcatc attcgcggag gaggagcagt gagcgaacgg cagctttcga    600
ctcgcttgcc atcggacaag catgtgcacg cttcccttcc ctatccttac cggcatcgga    660
cacgacaggg acgagacggt ggtggactgg tagcttatcg ttcgctcaag acacctacgg    720
ctgtggccga ttttctgtaa actgccagcg cgaagagtgg aaattgatcg acgaccttcg    780
ctccgtgctg ccgaaggact tcgaatgatg atgatgtact gccacgaacg gctattcagc    840
tatcgctccg cacaccggcc atactgaaat catctgttcg tgagaacacc atcggataaa    900
gtccgtagaa gatcgcatcc gattagccgc taacagcgga tcgccttcgg acttcagcaa    960
ctccaaatag caagccgcag ctgccggcct tgatgaagag cgaactgaaa caaaatacgg   1020
gtcaattggt caggtagcag cccgactgcc tttattggtg acagccaatc tgaagaacac   1080
aatcga                                                             1086
```

(2) INFORMATION FOR SEQ ID NO:843

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:843

```
aattgctctc acgttccttt tgcatcgact ctattcgtgt ttggttcagt cgcgaaaacg     60
ctgtagcaag tctttcagac gctcttcgtt caagtccgtt cggccataga cgaagttgta    120
ctgtcggccg attctcctgt acgagccgct ttttcttata gaaagcactt ttgtaggcct    180
ctacttcctg tcggcgggta gctcttctcc ttggagtaat atggccaagc tgtcaagtag    240
ctcgactcgg tcatgtccgc caaacgggcg tttacacttg ttttactttc ttcgctgatt    300
tggattcgtt ttccaaagga gtcggatctg ccacttccag gcttgagcct ccggcaaccg    360
gtctgttgtc gtaggtttca attcttcgga ttaggctgtg ccattgaatc cgtgagaggg    420
ttcgtagggt tttccatacg tactgcttta atgttcactt ccaccgaaaa cctcctgtcc    480
ggagagatac attcggtact tttccaatac aacggaaggt aattatcaga taatgattcg    540
ttttcaaaag accaaattaa agaaaaaata ttgacagacc ataatttgaa ggtgtttgca    600
gggcaaggca ttcaaaacaa gcattctata aagtttttag ttcgttgaat gaagtccgtc    660
```

ggtcatgtat tcaagtcact atcgggaaaa tcctct

(2) INFORMATION FOR SEQ ID NO:844

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 951 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...951

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:844

```
ggtctttcca ttcaattcgg acttcgtgac gatgaatcgg cggctcacca atgcgactcg    60
gtaggtatcc actgcttcct atccatctgt acctctgtcc gatgaagctg ctaatcaccg   120
cagtattttg cggattggta attacgaaac cctgtcgttt tcatttagaa ccgtatccga   180
atgtgccagc gaaatatgtt ggtacgcgaa tccattgtgc gcgaaatcac gtagtcatga   240
cctttagcag ttggcggact tccgctaatg ttttggagaa aacggccgga tttttacaac   300
cagagagagt gcgatagcct gattatcatc gttatgttcc agatgtccat cttctctttc   360
tctttggcca cactgatctt gaaaatagct cgacgatcag catggacgca ataatcccca   420
ccactccgag cggataagcc aagcataacc gagtgtgata gtcggatcgc cggttcccgt   480
tagatcatgg atgtctgctc ggcagctccc aggcccggtg tgttcgtgac ggcaccggaa   540
gaattcctac cattgtggac atggatatgc ctgtcacgaa gtgcagaaca ccgttgtcag   600
tacccccaga aagacgacgc ccatagccag taggttcagg taagcccccc cttgcgaaga   660
gaggagaaaa aacccgggcc cacttgatcc ccaccgagta aacgaatagg atcagtccga   720
actctttgaa gaaatatgta cgtcaggatg cagattcatg ccgaaatgtc ctaagactat   780
tccgaaaaag aacgaaagta acccccaaag aaattccgaa gatctttatc tttccaacca   840
aatccctaag gcaatcgtta cggcgaccaa gagaatggag tgccactcct acaccgaaag   900
caagtcatta agccattgca tattcatcca acagcttata gtagtcaata g             951
```

(2) INFORMATION FOR SEQ ID NO:845

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 567 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:

```
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...567

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:845

gatccccagt tttcaagacc aacgttggta agtatatagc ggtatttacg tccttattca      60
tttcgctgac ttgctcgcgt actatccggt acattttcca ttggcttccg cctgtttgtt     120
ggccaaagct tgtgtcatgc tgagttcaat ctttggcctt cttcttgcat cttcaggatt     180
ttctcctgtt ccactctgca gcatcttcgc tggtgaatgc attcgtccga agacggcgtt     240
ggaaacctcc gcagctttct gcatggcagt catcttggta gccaaggttc tttgttctgc     300
tcagcttcgg ccgcaagttg tttgttcatg tcccgaaagt attatattgc gaggccaggc     360
tgtccatcct tacgaaagct ataggcagag tgcggcagct tgttctgcct tatgatttgt     420
tgtcttggct tttgatgccg agaacgcggc atcataatga agaggatgat gatggcaacg     480
gccagtacaa cctcgatgac ataatggatc tgtttcattt gtgaatggga tatgtttttg     540
gttcgtatta ttcgagttct ttgattc                                        567


(2) INFORMATION FOR SEQ ID NO:846

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 662 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...662

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:846

ttatggttaa agacggcaac ctttccgcag aaaaaaaacg caaggcctaa ttaaccccaa      60
ctaccagaag agggtgtgtc aaaattcagt ttcaagcagg ggccgggatc atcgtttgta     120
tagaaaaacc gctatcaaat caatagttcc taaatgtttg cttagagggg ggagttttta     180
gtatgagagc tgagtcctcc aatacaagac ttttgggatt tgaggggggat cccctgcct     240
acggaagagc tgattttgtt cttccggcgg aggcgaaaag ggttcattga tccatggcct     300
tttcttacgt cgagctgacg tgaggttatc aatcgcatag aaatcgaacc gaaaatcgcc     360
caaatctgaa accaaaatcc cccaaaaatg gtcgagaatc ttttcgttct caggcgagat     420
tttttcaact cccgaaccaa ataaaaattt tctcagacca cgttttcag aactgaaata     480
caccggattt tcagtacacg tcaatcattc ggaagcgaaa aaggcagtct gaatgaaaga     540
tgcgccagat tgtcaagttc cggaccctgt ggcatcggat ttgtcgttct ttcgaccgaa     600
tagaaccaac caaccattaa cggattataa tccactagag tagaaaggac caatcggggt     660
aa                                                                   662


(2) INFORMATION FOR SEQ ID NO:847

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1259 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular
```

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...1259

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:847

```
gcaatataac cacggaagac aaatggctcg gtcaggctct ttgtattgct cggctgaagg     60
aggcccatcc gcagacaatg gtgaaagtga tatccagctg agaatataat cgccaatctg    120
cttacccagt atggctatac caagatttca aatgttatga tccgggagta actcctaaaa    180
acattattga tgctttaacg gaggaatctc gttggccaac tatacgggcc acggaagcga    240
aacagttggg gtacgtctca cttcggcacc actcatgtga agcagcttac caacgcaacc    300
agctaccgtt tattttcgac gtagcttgtg tgaatggcga tttctgtaca acgtaccatg    360
tttcgcagaa gccctgatgc gtgcacaaaa agtggtaaac cgacaggtac tgttgctatc    420
atagcgtcta cgatcaacca gcttgggctt ctcctatgcg cggggcaggat gagatgaacg    480
aaattctgtg gaaaaacacc cgaacaacat caagcgtact ttcggaggtg tcaccatgac    540
ggtatgtttg ctatggtgga aaagtataaa aaggatggtg agaagatgtc gacacatgga    600
ctgtattcgg cgacccctcg ctgctcgttc gtacactgtc ccgaccaaaa tgcaggttac    660
ggctccggct cagattaatt tgacggtgct tcagtcaacg tatcttgcga ttataatggt    720
gctattgcta ccattcagcc aatggaaaga tgttcggttc tgcagttgtc gaaaatggaa    780
cagcacaatc aatctgacag gtctgacaaa tgaaagcacg cttaccctta cagagttggt    840
tacaacaaag agacggttat taagaccatc aacactaatg gtagcctaac ccctaccagc    900
ctgtttccaa cttgactgct acaacgcagg gcagaaagta acgctcaagt gggatgcacc    960
gagcacgaaa accaatgcaa cactaatacc gctcgcagcg tggatggcat acgagaactg   1020
gttcttctgc agtcagcgat gcccccgaac ttcttcgcag cggtcaggcc gagattgtct   1080
tgaagctcac gatgtttgga atgatggatc cggttatcag attctttgga tgcagaccat   1140
gatcaatatg gacaggttat acccagtgat acccatctct ttggccgaac tgtatgtccc   1200
ggccaatctg ttcgctccgt tcgaaatacg gttccggaaa agcagatcct tcttggtcc    1259
```

(2) INFORMATION FOR SEQ ID NO:848

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1271 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1271

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:848

```
tacatctcca atttctgaga agcagttata gccggtggag ctatcatcca acggccaaat     60
```

```
aaccgataat gatcatccaa aagagcggag aagccaaatc gtcatcaaca cgactatcac      120
acggatagca ttcacattcc atctcgttat gcagcaatac cgctacacac gccacacaaa      180
acggcatgat ccatgtgcga taaaacttcc gcttcggagc ctccccggac atgtatcgat      240
agcctaagtt tctctctcct tctgactgta accggcccct gcagaatatc cggcgtcgta      300
ctgtcttcat tggaagaaaa gtgctctccc gtattgatct ttttatgact tcacgaatca      360
ggccgatact tattacggcg tgttcgctat gcaacgcacc accatcatgt cggacaagta      420
ggcttcgaat tcctcgatcg tttacaatcc gtatggttct cccgatcgaa atgtgaggct      480
aaattgtgca atactcctcc agcaggttat aggcatcctc gtcgatgtgg aagaccttgc      540
tcccagattc atcgtgagcg ttttttttcat cttgtttttc cgttaataca gattcttctt      600
cgggcttaat atcgcgcacc aatagttgca atgatttttg ccgttgaatt cgttctcttc      660
tatcgtgtag caaagacgaa atgagcgttt ttgatctcat cgcaatgacc ggcctgatta      720
aacgcaatcc cactcccgga tggcgttcgc ccgatcccac tctcacatct atcttcaggt      780
gttcgaagct tttcctacag ccctgctacc accggcatca tacagttgtc gggtataaag      840
accggcttgg agttttccgg gccgaatggc cccatccgct tgggttgtcg agaagtttgt      900
aattgacctc ttcgatggat atttcggcat cacatctatt tgtggcacca atagttccgg      960
cgatacagcc tcttcggcat gtccgtaatc atctttcgga aggtttccag attctcttct     1020
ttgatcgtcg accggaggca aaaggatgcc ctccgaaatt gaccagcaag tccttgcatg     1080
ttcgatggct ttgtacacat cgaaccctcc tacggatcga gccgagctga aatgaaatca     1140
ccgctcttag tcatcacgat cgtcgggcgc gaataggttc ggtcatcctg ctggccacta     1200
tgccgataac gcccttgtgc cattcggccg gtagataacg aggatcttct tgtccacatc     1260
ggatagctcg c                                                         1271
```

(2) INFORMATION FOR SEQ ID NO:849

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 356 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...356

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:849

```
gctgtccgtt tccctatcct ccacgggcgc atggcttggg gtggagtatt tccgagagct       60
tggctcgcag gcatacggca cctcttacga ggagggtacg gcttcgtaga taatatcctg      120
tgggcggaag tagtagtaac cattgtcctc agcagggcac tgatggtctg acgctcttcg      180
tgcagctttg ccaaatgaac tggtctcctt tcctgatcaa agacggagtc tgcctgtaag      240
ccagatgctg tcggggaaag tgctgatcgg taagggaatg atgctgtcgt aatgtaagga      300
gaggccatat ccaccgtata ggagattttg gctttgagcg agtcttttc agagtg          356
```

(2) INFORMATION FOR SEQ ID NO:850

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1642 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1642

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:850

```
tagaggatcc cctggaaaaa attccttttc attttttgacc gcctgtcata ctgatcgcta      60
tgccttttta gcaacgtttc cttcacttgg gcaaagaaat tatatctgaa gtgaacagaa     120
cagcctttc gtttttaat atagagcgag cataatccga cctcggccat tctttcagaa      180
aaagcgaacc gcaatccaga aataatggaa cgagaatctg aaaaatctca cgccacaaag     240
ttttcttttg gtttgaaaat ttttcctttc cgacgcagga aaaaaatatt ttaccgcgac     300
tttttgagtc ctcttaagta aggtattttt tttaacatac ttgaccgaat tatgcatcta     360
accatagtgt agaatcctca tctgtaggta attgcaccga acaaccgatt tgtcagtaca     420
ttatgtctga cgaaacgcgt attttgactt caaatgaaag aaagattgaa ccaaaccgta     480
cgctatttc gcctatactc ttcgcagtat atgccggcct ggtcatatct ttcactcact     540
ccatatcatc aatggcgtga tcatcgtcca ctcccacgta cagtggggga caacgaaagc     600
gatccgcagg acaatccgca ttcggattcg gaattgatct gtacaatcag ctttcggcca     660
tattcacgac ttatttggat acgccgccat agacttgaaa gaacctgtga gggttgtcgg     720
cgtcgttcct ttctttgcga taatcttact gctctcattt cggagctaac tccttccaat     780
catccagggc tcctcccgta gcctgatcca ttcttacctt atttcggacg atcattcatt     840
cggatggtat tgcgcgcgct tacaatgaga tccgttgcat cgcacttgta gatctgcctt     900
tctatgctga tttatcaagg ggatcgaatg tcatccatag ccgtgatgca aggattttca     960
tccttcttaa taccgatctt tcgtgggata gggagtggga cacactctcc taacctcaaa    1020
aaccgactaa aaggatcgga ataaggatac cgaacagaca ctatatccat atcaagccat    1080
caaaccaaaa aataaaatga aacaactaaa cattatcagc ttcatcatgc tttcctattc    1140
ttaggaacga gcgcatcggc tcagcaatcg ggcggaccgt tacaggtacc gtagtggaca    1200
aaagctcaaa agaacctatc gcatagtaca agtattcgtc aaaaggaacc actctcggaa    1260
cttccacgga tgcacggaaa ctactcgatc aagggaatcc cttcgggtaa tcaaactatc    1320
gtacccgact catgggttac tccacttgcg aagaaaaagt acatatagaa aaggtggttc    1380
ccgccacgta gacctctatc tgaccgaaga gattctctct ccnatggggt agtggtatct    1440
gccaatagaa acgagacttt ccgccgtcaa caccctcgtt ggtaacggta ctgtcgccgg    1500
aactttccct caaaaccaat ctaccaacct gagtcaggga cttaagttcc agcccggtct    1560
gcgcgtgggg acaactgtca gaactgcggt ttcaaccaag ttcgtatcaa tggactcaag    1620
gagcctattc gcaaattctt at                                            1642
```

(2) INFORMATION FOR SEQ ID NO:851

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 919 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

```
      (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...919

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:851


catcgaagtt ctattttcat caagcgtcct tacatctctg ttgtgggcat attcagaaga       60
agattctcgg agaactttcc aaaggtgaac gctccagtat ggctttatag accgcattct      120
atttgtgatg cctaatcttc agcagaagcc cgatggagca gaaccgagct tccagatgat      180
acagagaaac gctgggaggt attattcgac ggctcataga cttaccatgt gccaaggatg      240
aagaagggaa gttacccctg agattattcc ctttgaagaa gatgccaaag ctcgctctat      300
atgtggcagg aagagcatgc tcgactatgc gatactgagg ctatgaagta cttgtaggag      360
tctattgtaa attagaaatc tacatcatcc gttttgtctc attattcagt tggctcgatg      420
ggtatgtggc gaaagtgaaa atccgctata gacctgacat ctgtggagcg agccatcact      480
cttaccgagt tttccgccat tcggcacagc aagtacacgc agagatcgca ggtgttcagt      540
cactcagcaa cagcaacaac tccttgccga gctaccagca tcttttcaac tgccgaagcc      600
ctgagtattg cccaaaaatt ggggatgaaa gaaagagttt taaggatttt ctcagtcgta      660
atatcggaca cctctttgct aaggaagaca cggactttac cataaactca atatgtaacc      720
gagcgcactt tctgcttatc agcatttcgc cacccctttat taaaccgaaa gtgtacaaag      780
tgcaatagtg tgccattcaa atcaatttta tcaatgagca attatagatt caattagaac      840
catacaaagg tgtgcggaca cggcatacct gcccatcgtg cgacgtcctc gatgcttcgc      900
tcgctatatt gacacagag                                                   919



(2) INFORMATION FOR SEQ ID NO:852


      (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 936 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...936

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:852


gaagacgatg tgacggagga ggaattgctg gcctgcgtgc atcgcctgat caggatccga       60
cggtagatgg cttcatcgta cagctccccc tcccgaagat atcgacgagc agaaaatcat      120
cgaagcagta gacccgcgca aggatgtgac ggatttcatc ccatcaacgt aggccgtctg      180
agcatcggtt tgcccgtttc gtctcggcca caccgaaggg aatagtggaa ctgcttcgtc      240
gctacatatc cctaccagag gcaagcattg cgtagtattg ggacgcagca atatgtaggc      300
aagcccgtat cgcagcttct gctccaaaag ggagagccgg cgctgcacc atcaccatct      360
gccatagccg tacccctaac atcaaagagg tagtctgacg gccgacatta ttattgcagc      420
tttggggcag cccgaattcc tacagccgat atggtaaagc ccggagctgt agtagtggac      480
gtaggtacca gcttgtaccg gactcgacac gcaaaagcgg tttccgtctg acgggcgact      540
caaattcgat gaagtggccc ccaagtgctc gtacatcact cccgtaccgg cggagtaggt      600
ccgatgacca tcgtatcgct catgtccaat acccttcggc aagtaaagga ttgtaccggt      660
aaaccctcct tcccttattt gccaacacct tatcgaagag gcccgtcatc aatatcggtt      720
cgtccggtat gatgacggcc tcttttctta ttgacagtgt gtcatcatgc gcaaattgct      780
gcgtgcttgc ggcattcgtt tcttagcgcc ttgnactttta cgcattctta cccctaaaa      840
tggggtatgc caaaaccgaa ttttgacacg ggctccctcc t*cgatactt tcaagaattc      900
```

gcttcgtatc ctttccgtta ggaggtaaag ggtact

(2) INFORMATION FOR SEQ ID NO:853

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 3434 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...3434

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:853

```
tgcaccaacg gttcgccttc gttggaaaaa gaccttcgcg atggcttgga tatggaaagg      60
ctcatgactg gaaagcgtga acagcgtacc tacgaaagtt gtttcatacg gctgagttcg     120
tccacggcat gtagtaagaa cgggctctcc cagatgcccc atacgccatc gaaatcttca     180
tcgtgggcat actctgcttg ccgaaataac gtttgtagcc ggcttgtttg acaaaagcat     240
cgaagccatt gatccgtttg gtgcaccatg caagaaaatg gattgataac cgatcgcccg     300
agagccgtcc ccaatccttc aatctcattg cccgaatagt gagtgtaatg aagtgtgagc     360
ggagggaagg caacgagctt aatatggacg gctggcatcg atactcttgc gcccgttggc     420
aaaagcctgt tcgaaaaggt acccttttgt gaaatcgagt cgaagcaggg tgtatatcct     480
ttgtaatcgg aatgtcttgg ttcagccgtc ctacgtattg gcgagcaaag ctttcgatgt     540
tatcaccatc acgttgcgtc cacgcaactg actgaaacga gctgtcgttc cgtcgccaaa     600
tgatgaatgg gattgaatac ttgctccaac tccttttgga ggcataaaaa cgcttttcct     660
ccaatccctg tttgccaatg gtacgatgat gctgtagggc gtgttcagta ccaaagccct     720
atgttccact ttgtcaccga cagattggca taactcattg tcataggacg ccacgacttg     780
gcaaactgcc tnctcgtata ccccatacga taaatgcaat agcggcaacg aggctaccaa     840
cgtgaactgt ataataatgt aggctgtctt tcgcttcggc atggtgcgta ccggcttgac     900
ccgatgatat agccatacca tagcagcaac gggactatag ccagcaggct catataccag     960
taattcagga gaagatgcca atcagtcctc cgccctcatg gctgaattca gagaaaaccg    1020
tcgaggatgt cgtttcaagg tgtatggata gtaaatacaa tcggccagac ctgccgccgc    1080
cccaaagcat ttggcacgaa aaaggtccag tcggtcagga ttcgatagat cgcttggcac    1140
gaaacctgaa cggcagaaag ctcaacagaa taaaaaggca ttcaaataca aaacggaagc    1200
cgtgtcgaac ctaagccctc ccatcatgca cgccatacct gctcggcagt catgtcggca    1260
aaaaagcgat agttaagagg tagaacagtc cacgggcaat accgaaaagg aaataagcca    1320
atgcatacga taggcaaaag cccaccagct gttcgttcgt atcgtccgct taaaatattc    1380
atatctcttt gtgtgtgttc tattcggatt ggaggcaggg acgagggtaa tgaatgattt    1440
cggtcacata tccccccaat tgagcctatt catgattcgg tgcacgatgt atcccgttgc    1500
accggcattg gatctgatga gtctgctgct gcgcgggatg cggcgtccct ataggccttg    1560
tccgtttgat tcgcttgatc aggttgccaa attcctctgc tgaggatacg gagaagctcc    1620
gccgacatct atcaattcac gggcttcctt gaatttctca tatcgtgtcc gaaaataacc    1680
ggtataccat agactgcggc ctcgggtgta ttgtgatgcc tttgccgaat cctcctccga    1740
taaaagctac ttgaccgtag cgataatgga ggataggaga ccgaagctgt ctacaatcag    1800
acaatcctgc cggcaatatc gctttccgta gcttccgaaa gtcgtatgaa aggccgtcgt    1860
attgcgatat gatctgaagc aaatgttcct tgtcgatttc gtgcggtgcc atatgagttt    1920
gatcttggga tttcgattga agtagcgtac gagtatctct cgtcgggagg ccaactgcta    1980
ccgcccacaa tgaccaaacc gtcttccgga cggaagcagc aaaacgctct atcagcggaa    2040
gcgatttccg agcttcatta cggagatcac ccggtcgaag cgcgtatctc ccgctacgga    2100
tacatggcta tcccatgctt ttcaagtagc aggcgtgaag ccttgtcctg aacaaaatgt    2160
```

```
gtgtaaagca gtgtagcaaa cgtttgtatg ctcctccata ccagcgaaaa acagctgtga     2220
cggtcggaag atggatgaaa ccagataggt aggttctgcc tacgctccaa ttctgtcagg     2280
aaacagggcc agaagtcgta tttatgaaaa tagccatctc aggcttgacc agatccagaa     2340
acttacgcac tcggcaaacg atctgccggc aaatacacga tcacgtcggc accttcgtaa     2400
tcttacgtac ctcatatccc gaggggctga agaaggtaag cacgatccta agtccggata     2460
ttcgcttcgg atgcgttcta tcatcggtct cccctgctca attcgcccaa agaagctgca     2520
tgaaaccata tatagcgccc gcccggcata tgccctcacg cagctgacgc cacaccttcc     2580
atcgcccacg aaccatctgc gggctttggg attgaacgga acggcaagtt tgatcagcga     2640
agaataacca atccgatcag gctgaaaagg aatcgcatat atttcgaaaa aaattttgct     2700
gtcagcctaa gacttcgatg gcacgacgta tgcgtccaac ggtccttcac gcccgagcac     2760
ttccatgatg tcgaagatat gaggtccctt gcttcgccca cgagtgccaa ccgagtggca     2820
ttcatgatat tgccgaggtg atgccattgg tctcgatcca attcttcaca gtgggttcgg     2880
ttgcttcggc tcaaacgatc ggtgagagtc cagcaattcg gctagttcgc ccaactgctt     2940
gccgtatctt ctttccagcg ttttttcact gttttttcat cataggatac ggtgcgatga     3000
agaagaatcc ggcttgctcc catagctctc cgataaagtt acacgttcct tgacgaggga     3060
gattacatga gctgtttct cgtcggtgcc actactccat tttcgcgaag gatgggacgg      3120
aagagttcgg ccaactcgca ttgtccttac gctggatata ttggtgattg aaccagcgtc     3180
ctttccgtag tcgaacttgg ctccggcctt gctgcatttt tcgatgtcga acagcggatc     3240
aattcgtcca tgctcatgac atcctgatca ttgcccggat tccgcccaga agcgcgagga     3300
agnttaccac tgcttcgggc agataacccg cttcacgata acctttggat atatctcccg     3360
tttggggatc tttccactcc acggaaatac cggaaatncc aaacgatcgc catcgcgttt     3420
gctcagctta cgtt                                                       3434
```

(2) INFORMATION FOR SEQ ID NO:854

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 420 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...420

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:854

```
cctggcgaat tggtgaatgg ccgtttcgag tccggtaaac atggattcga gtccgtctgc      60
cctgtcagat acaaggtgac gaatttgtat tccagcccta atagatcaga tcctcggccg     120
gaatgccact gtcgagaagt cccttgattc ctctatcata ccctcgtgca tacgggcatg     180
gagcctgtcc gttatctttt gcgtcgggtg tcgcgatcca gatcgagacc gataatcaga     240
ctgtcatagg aggaaactcg gtgctttcga ccggattgtt cttgatgtat tcggtatttc     300
gatagccctg atagctcgct gtgccgagtc cacgtccgtc ttatgtgcag agggccgtat     360
gcagccagta taagagtcag ctctgtcaaa cttttccttg cagacgatca cgaagcgtcg
420
```

(2) INFORMATION FOR SEQ ID NO:855

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 529 base pairs
        (B) TYPE: nucleic acid

(C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...529

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:855

```
cctgcaaatc gcggctctct atatcaattt gctcttccgt caggaaatgc tcgtacggca      60
gaaacacagt tggcactgat tcgcgagcaa cgcaatcgac ggccgaaatg gttcgcgtag     120
gtaaatgggc agagggtaag ctcctcgcat aaatgcccag atggccaagg acgaacaact     180
tctcgtacaa tatcgtcgga ggaggagctg gctcgtctgg acttggggca agccctcgaa     240
ctggacaccc cgaaagcatt gcagtcaagg ctcccgacac agacgttctc gtagagaaag     300
gttgggatct ctccttgctc ccgaagagat ctatcgcacg gcttcggctt gaaaccggca     360
ctgcattcga gcgagctgca aatagcttcg gccgcgaagg tctggcctcg ctcgtgcggc     420
atacttccga cgctcagcct cctgccggat acagcaacgg ttactttccg cgacctcggc     480
aaggagtatg cgccatcaac cccttcttct ccgaacagtg gaagaacaa                 529
```


(2) INFORMATION FOR SEQ ID NO:856

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 571 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...571

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:856

```
agagaaagat tcttatgaaa agaccttgct gatgtctgct cgtaagcata tattgtagcc      60
atcaggatat tcgatcggcg agaggccgat ctgccaaagt agggttgatg cgctttcgcg     120
atgcagagac agggcagact cattggggga taccgctgat agctccgttc ggaaagcgta     180
tgcggatgcc tatgaggacg gcaagtagca cttgccgttt tgctcaaacg atgtggtgta     240
gatacactga gatacgtacg gggcaggatt tcgtgcagca gcttcttatc ttattaaaaa     300
acgctcatga gacactctct tgccattcgc tttgttcttt ctgattttgc atgctctttg     360
tctcttcctt tctgaaggcg caagagcttt cttcataggc aaactcgacc gtgcagagat     420
gcaaatagga gagcaggcag tatagatatt actatccgca cggcagattt ggcgcatact     480
catctgcaaa acctactgat tcgacgatga gtcggatcga aattttggcc tttggcattc     540
ggatacgttg ttgtgaaaga tccgatcgtg g                                    571
```

(2) INFORMATION FOR SEQ ID NO:857

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 600 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...600

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:857

```
tatattgaaa atcggtgata atatccttaa catataggaa gttattcgac aatatctacc      60
atcttgacga atagttgatg tttccacgat tgaaatcagt acccgtcctc tgattttgta     120
ttaaaaatta agcaaccttt atccaaggtt ttgtactcaa gcctaactga ggtttgatgg     180
aatattctcc attttctagg atacggttaa aaagctatct ttagcttctg ttttgagaag     240
cataatgcat caactgtttc attgttaagc atgcaaccat caatgtaaat tataaaaact     300
caccattagc aatattaggg tgtatgcttt gatcataaag gtgctagcaa gattgttaga     360
ttgttcaact atatcatctt tgtcatcaaa acttgtgta caaatctata tgacggattc      420
atgtctaaag actctataga acaaactgac agaaaacatc aaacttgaat gtgtttttta     480
ctaatgttga ataaatccag aagcaaacga catatcatct gctttagaag aaaatgctaa     540
ccttcttctt ttaacttatt gccaaccttt gtactgtggc gattgtagga ctcctaatta     600
```

(2) INFORMATION FOR SEQ ID NO:858

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 534 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...534

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:858

```
gaaagcagca aaatgccata caggcatacg aagaattgct aagtctcgac ccttcaacga      60
```

```
agaaggtcac tgcggtattg ctacactcat gatcaaagag gacgatcagc cgaagcagaa   120
acatttctgc gcgaagctat cgaagagtgc cggttcagcg caatctgatt ctgatgctcg   180
tcgaaatatt ggagaaaaag gacaaacgca ggaagcagca gaatggcgtg ccaaactacc   240
ggaagagagg tggaaagcga agcggttaat ttcaatgatc tttacaaggg taactctatt   300
aacttctttc aaattaacac ctgacctcga tggcaaagaa gtgtatgtgg tctggaccgg   360
gcatacaccc ggagtttatg ataattggga tgatgtcgag cgcaaacaga gggattcaat   420
aaagcccgct acaaaagctt tctaccgaaa gcgatgccct aagagcctat gaagacggag   480
cagatgaatt taccgcagaa gcatacggat ccactggtac cgcaccggag cana          534
```

(2) INFORMATION FOR SEQ ID NO:859

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 703 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...703

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:859

```
cgaccccttt gatgtcggac aaacgtgctg tcagttctgc cagacggttg caccgtacag   60
gtcgaggccg tagaaggtaa gatcctgagc aatcagttga actcccgagt cccatgcttt   120
acgagcatcc gtacctcttc gactaagcct ccatcgggcg cgaccgatgc cggccggtga   180
taatcggtat ggcgcatacg aacagctgcg atcgcagccc tcggatattt tcagataggc   240
ataatccgcg gagtggtcag tttgcgcctg ttctctgcct cggcataata agactcccca   300
aatgagaaat gagttgcttc cagtcgaatt tgccgtagta agctccactt cgggtatctc   360
cttcttcagg tcttcccgaa accgctcgct cagcagccca ttacgtacag gctgccgata   420
cgtccggcct tcttcgcctc cccatctcca gaatggtatt gacagactcc tcctgtgcat   480
cgcctatgaa ccgcaggtat tcaccaccac gatctcgccg cataccgaag ccggatcgta   540
tgcacggtat agccgttgga caggaactgg cgcatcagca cctcgctgcc accagattct   600
tggagcaccc aagcgtaatg acgtctactc tgtttctctc attcgccaaa ggagagagtc   660
cacgaattcc ttcttacgga agatctcagg tcgtcttatg ccc                     703
```

(2) INFORMATION FOR SEQ ID NO:860

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 697 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
```

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...697

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:860

```
tgctactgat cgtttattgt tattgatgat cgaagtcgtc gatgcacagg ccacaaaaac    60
ttatggtctc aagatcaaca atctatcaaa gatagagatt tcgcgcaagc cgatggagaa   120
ccactaaagg aattttcaca tacttccaag agaacagctt attccatctc ctccgaatag   180
tcctggaaca ggaagtattg taggggaagc gcgtgatatg gattgcctta gctctctcgt   240
acaaagagct ttcagagcat ccatcccggt gcctttcttc gccgagacga acagcagtca   300
ttcccgagtt tggccatcca ggtctgttgc agctcctcgg cactatgttc tcttttgttc   360
ggggagtaag gtcgtcttcg tctttgggtg tgaagagaac gcatcgatct tgttgaagag   420
aagaagcatc ggcttttctt ccctgccgtt atctccgcca gagtctggtt caccacctct   480
atttgctctt gaatgccgga tgcgacatat ccaccacgtg caccaacaaa tccgcctctg   540
cacctcatca agtgtacttt tgaaagattc gaccaactgt gtgggcagtt gcggataaac   600
ccgacccgta tcgctcagca agaaaggcaa attgtcttga tcaccttgcg caccgtcgta   660
tttcaacgtg gcaaaacagc ttggttcggc gaagacc                            697
```

(2) INFORMATION FOR SEQ ID NO:861

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1133 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1133

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:861

```
tgaaaaaggc atccatccca gcatgagata gatgcctttc cttttatcgt ttgatccaat    60
tatttcgctc ctttggtttt acacgtatga tatctgctct accgtattag cttccatcga   120
tgtgtagtat ttttctttta cctgctttaa gcagcgagag ccttgtcgta ttgtttgagc   180
tcttcgtata cgcgacggct ttgatgagac agccggtgt aatggcatcg ttagaggctg    240
cggcccagct ttctcaaaat agcctacggc ctcttcatat tttttgagct gtactaacag   300
tcaccgataa gacgagtgat agatggtgct accatatttt cctggaggag aatcccttca   360
gatgatcaat ggctttctga tattctccga ggtgtagtag caaatgccgg cataggcttt   420
tgccagattg gatgcatccg accggagtat tttttgatta ctgtcaacaa tcccatttcg   480
tttgcaccgt tccatttaag gctgcgctgt ccaattcctg aatgaatttg tcttcggcag   540
gtataccttg gcagcagctt cacgagcttt aggttcgctg acgaaacgtt gtaggcaaaa   600
atacctgcca caatgataaa aacgcccaga ataaccagcc gattttggtc atgttctttt   660
ctatgaactg ctctgagcgt gaaacccttc tcctacgtgg ttgtccggtt gttgattttc   720
tttttttagcc atatttggaa taattattta tttcttttcg gtcgcacaaa ggtacgcgtt   780
tggcgtgata tacaaatgtc ctgtccgaat aaatatacga tatgtaatgg ttgtcgaaaa   840
cgtttcttct cttcttgcct ccaatatccg atttacttgt ctctcttgag ccgtcaggta   900
gccgaaaaga gagctattgc caatccacta accgctcttt acggcatacc gtatcagttc   960
ggctgcattg gtgaatccca tttgtgcaga atattactac cggtgtgttt ctaccgttcg  1020
```

```
gtaactaaag tgcatttttt cggctgnttc tttggcagaa tagccatcgc acagatatgg        1080
actacttctt tctctcgttg ggtcaagctc gagaagtccg ttctgctctg tgc               1133
```

(2) INFORMATION FOR SEQ ID NO:862

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 398 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...398

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:862

```
cgactctcga ggatccccga ggagacgacg gacaggtgtc ccgcttcggg ggggattgaa        60
ccctgctacg atcctccaga acgagtacgt agctgtctca ttattttcca tatactactg        120
cgattataag gttatcgcag caaagatcgc gaggcaaaca ggaatgatga agatgggttt        180
cttagcgttt cttagatgga ttagaatgga aaagccgtgt atctgttcca atttctggct        240
tgccgatgca gatttatgtt gactgcagaa agaagactgt agtaatgaat gaattcttaa        300
aaatggaccg cgctatgggg aaggaaacca gctacggcaa aaaacaaagc aataccatgc        360
caatggctgt aatgctatat cggacgagtg gatataat                                398
```

(2) INFORMATION FOR SEQ ID NO:863

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1362 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1362

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:863

```
ttgcaatagc aacacataga taagccgggg tttgagaaga agattcaaag tcgccatagt        60
gagagattat atattattct ttatcagatc aacgaatcaa ttttgcgatt attctctccc        120
gtcttggggt ctttacagcc ccagtctgaa tgaggcagta cgtgccgtta tgctttttga        180
```

```
tgctttcgtt ttggcaccgg ggcagagtat cagctcctcc atagactcaa agaggtcgtc        240
cgggagacgg acacaccatg tgtgcaacta ttagggacga ctcccttgag cccaccatct        300
gccagacatt ccaagagata atataggcaa tatactcaat ggattgtcga ggggacgctt        360
accgaacttc tcctcataat actcgataaa gggattagta gtgcctcacg agcaaggagc        420
aggttatcgc cttgccattc aaagcataga tgttttata tgccttttga gccatcttga        480
gccattcgcc gtgcttgaag tattctctga gatgatgcga agctttctgt cgagcatacg        540
atacgttgag gaataggagt aaactccccc gtagtagtgt catacctgtc acaagataag        600
gagcttcgcc acaagtaatt tccatacgcg tggagcaaca tagtctttcc atgtcttacc        660
ttcggggaat gtaataggtt cggtagtgca atccaagtct ttgtctcggg ttgctcaata        720
ttaaacacat ccttagacca aaccaagcct catcgatcag attattctga gcgttgcaaa        780
cccagagggg gtgaatactt ctgctttatc cttggtgcgg ttggcttgtt cttcttggac        840
ttcagcactc tgggctgtat tacagtgtca tgctcccctg tatgctgtca gtcgtaattg        900
gtgcatcgta tttggtacgc atctcccagt gagtatagtc atctgtagcc caaaagatat        960
tcctctgagt cgtatggtca agaggagtct ttgcagaagt ccttcggact gacgcagtag       1020
ttcattctcc taatgtcgac ccccatcttc atatcgctca cgagtaacct ctttgcattg       1080
acaagcagtg gttgtcaaat tactgtatac catatagaat tgccatttgg gcacagatta       1140
gaaataggca cgacaaatct gcccctactc ttagccccgg ttggggacat caccaggaaa       1200
aagggcctcg gtcttttatc gttttctaa actcattaca taagcaaagg tactaagtta       1260
ggggcatact aacgagggaa atggatattt ctttaccgag tagatcaaag tgcaacagat       1320
gggtaaacag cagagatttc cgggcattcg ggttgggctt tt                         1362
```

(2) INFORMATION FOR SEQ ID NO:864

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 750 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...750

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:864

```
ccggtcgagt ttcatgagaa gaagatcgcc gaagccggga aagaccggag gttttcgagg         60
agcgggtaaa gaaaaacgaa gacgggacat accaaaaccg atacggatcg atggagtgga        120
agacggcagg gatatcaaaa caatcgccgc aggctgaaag agtacgaaga gaaagcccgg        180
acaggcggag agcacagccg atcggcgaat tatacggctt tcaattatcc gtcaagagcg        240
aagccccatg aaagagagtt tcgacttcgt ggataaccgg ttctttgtga aaggtgtggc        300
agcatctatt atacttacaa caacggacat ttggctgaag acccaaactg cctgcatga         360
actttctgaa tgccttggag aagattccca gatcgtcgag agtcatcgga aagaactggc        420
tgcgacacaa gccaagatac cacgttcgaa acgatggttt ctgccgtatg gaagaaagag        480
gaggaattgc ggagctgaag agacaggccg cggagctgga tcgcaagatc gcccttttcgt        540
caaaaaagag gacaacagcg aagtgaaacc ggaagaaacg gtcgctccga tgcgacaatc        600
gcatcgatgc gcccttacgg gaggagctaa aaagggacgg tcttccgagc ggaatcatac        660
cgattggaaa gaaatacggg aggatgaaaa atcaaaccct gcataaagcc tggaaggtgg        720
tgagagatac agagaatacc tgatactttc                                        750
```

(2) INFORMATION FOR SEQ ID NO:865

(i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 665 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...665

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:865

```
gggctccaat tcctgtctgt tcgatggtcg ggaagatcaa agccaacgtt ccccactggg    60
ctatatcctc ggagatgaag ggagcggagc cgtattggac ggctgttcat cggcagcctt   120
ctcaaggggc agatgccgga ggggctggcg aagctttcct gcaggagtat ggcctgacgt   180
ctgccgatat tatcgaagtg tctatcgaaa gcctttcccc aatcgcttct tggccggatt   240
ctccccttta tcgcgcagca tttggacatt ccggctgtat atagccttgt acagatagtt   300
tcgacgactt tcttgtgcgc aacgtgctcc gatacaatcg tccgatctcc ccctccactt   360
catcggctct gtagcctttc attatcggga aggttgagta gcgtcatcaa aaaaagaggc   420
ttaacgctcg gatcggtact gaaagtccga tggagggact tatacaatat caccacaaca   480
atcatgtttg gaagattacc gaacaagcct tccctgtacg accgactgga agaaaagtca   540
ccagagagat cctcgaagac atcaaccgcg aggaccagga aaagtggcga agcccgtcaa   600
gcccggacta ttcccgatga tccgaaccga ctggtccaac aaatcatacc acggcattgg   660
aagcc                                                               665
```

    (2) INFORMATION FOR SEQ ID NO:866

            (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: 402 base pairs
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: double
                (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
                (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
                (A) NAME/KEY: misc_feature
                (B) LOCATION 1...402

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:866

```
gtccaggcat tcaatagcat tttatcttta tttaattgca tcaatccact ccattctctg    60
taaagtaacg gtcattattg atcatccatt taccaacgtg taggcaaaat cagcatctaa   120
agaaagtcct ttccaagaag cacctaagag aaaccacctg taataggagg agtaacagac   180
ttatcaattc gtgtctcaag tcagctgagt actggcttgt tgtaacttta ttaccatccg   240
```

```
catctacttg accaggaaca taccacaact gcttaccggt tttttgtcg attnagcata        300
ttcagctcat atagaacgaa ttggggtacc caatttncca tatgtaccgg tattaggcaa        360
catgtactta ttgagaccna agaaaagctt ttttatttcc tg                          402
```

(2) INFORMATION FOR SEQ ID NO:867

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 568 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...568

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:867

```
ggcttcgagc cgttccagct cctgcttctc cttgaaggtc agctttcgcg acgctcggca        60
gcgtcggttc ggggcttttc gctttctgcc ttacgtgtga gggggaagat tcgacggtct       120
gcctttcggc ctcttcctgc tgtttgtttc gcggtactgg gtgtagttgc cggggaaatc       180
cttcacgatg ccgttccctc gaacgtgaag agatggttca ctaccttgtc catgaagaag       240
cggtctgcga gacgacgagt acgcatcctt tgaattcgct caggtagttc tccacacgtt       300
cagcgtgagg atatcgaggt cgttggtggg ctcgtcgaga atcggaaatt ggggttcttc       360
atcagcacgg tgcagaggta gagcctgcgc tgtcgccacc gctcaacttg tggatcggcg       420
tatattgctt ctcgggcggg aaaggaactg cgtcagcaag gcccgatgcc cgagagggtg       480
gtaccatcct ttattccgaa tcacctcggc gatgtcctgc acggcttcna tgacgcgttg       540
gtttcgtcaa actgcatgcc cttctgac                                          568
```

(2) INFORMATION FOR SEQ ID NO:868

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 672 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...672

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:868 •

```
tagccattgc tgttatccga agcatgaggc tggctaataa gaccataaga attttcgtcc      60
tgatatggta atcggtgtag gaggctatgc cagtggccaa ccttacgcag agcacattcc     120
ctcgggatcc ccaccctcat tcaagagaaa acagctatgc cggtgtaacg aataaactgc     180
tgagccgagg agcgcaaaaa tctgcgtggc ttatcccgaa atggataaat tcttctctcc     240
tgaaagatcg tttttaccgg caatccgatt cgccctgaaa tagaattcgg ccacccagcc     300
gctcggagtc tcttcgcttt ttcggcttcg agcagtccga atccctgtcg tcttggtggt     360
cggaggtagc ttgggtgccc tgactattaa cagagtatcg ccgacaagct cggcaaatgg     420
gcagaaagcg gtgtacacct ttatggcaaa cgggaaagaa ctatattgag acagccagaa     480
aagcagtaga aatcatcccg ggttgaaatg ctatgtcaat gattttatca ctcgaatggt     540
tatgcatact gtgcagccga cttggtagtg tcacgagccg gagcttgccc atttcagagc     600
tttgcttgct gggaaaacct acgatactgg ttccctccca atgtggcaga agaccatcaa     660
                                                                     672
acaaagaatg ct
```

(2) INFORMATION FOR SEQ ID NO:869

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2760 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...2760

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:869

```
ttcggcctcg tagaagagcg tccgcgtctt gagcgatgcg tttccggcac gtctttctgt      60
gccagctcat agagagatcc ccatgtgccg aggtctgcca gccgaagtcc acgggcatga     120
ccaagacatt gtccgccttc tccatcagcc aaagtcgatg gaaatgctcg gacagtaggg     180
gaaagcctga tcgatgaacg ccgctcttca ggtgtattga agtgtgccaa gccattttcg     240
agagagaggt tacttccggc agatgcttgc ggaatgcggc aaggatgctc tccagttcca     300
tacgaacatt ccactattcc acaggaattc tccactggcg aggagatgct tgccatctcg     360
gcattgggct tctccgtaaa ggttttcaca cgataaaatc accggtcttt cttcagcca      420
tttggatata tccatagccc gctccggacg ggatggacgg atgccgagcg tcacgagatg     480
ctcgtgatcg ctacgaactc caacgcttcc gatgcagcac gcacgaattc gtcttcgcga     540
ggatcagatg atccgaagga gctacgatta tgttggcttt gggattgccg cgtaaatgtg     600
atagctggca tatgcgatgc agggtgccgt attgcgaggg tcggttcgcg caggatttga     660
tccggttcga tctcaggaag ctgttccgca ccttgtccac gtaaagttca ttggtaacga     720
ccagaatgtt ttcccgggga taaaccgtgc gaaacggtca tatgtcatct gcaggaggga     780
gcgtcggtgc cgaagaagtc gaggaactgt ttgggatggg attcacggct gnaggccaaa     840
agcggcttcc tattcccct cccataatga cgcaataatt gttttcacag ccatagtcgc       900
tattctattt ttaagttctt agacaaaact atcaaaataa taacgtcatg tctcaagaaa     960
atcgtacttg tggttcgtaa taatttcata ggccaatgga ggattttttc cctcctcaca    1020
tcgtttcgcg acttggtggt ttttttctcta ctttagcggg cggaaaaatt attcgcaaca    1080
tatttttctt ctccccaaac tctttgcttt tttcgcaaat gccaaggtcg atcgaaaaat    1140
ctcattctaa aatcaccaat aattatcacc aatacagtat gaaaagaagc agactttag    1200
gccgcatcgt agtactatct ctatggttgc cacaattccg gcttcggctg tcagccaacc    1260
gcagatgacg ccctgcagtc gacacacacc tccgatcgtt cgttcggcag gggagctcag    1320
cagtagctga cgaatggagt gccgccatgc cccaaaccac atggagcagc cagctgatgt    1380
cagttggtac acggcagacg gcacggaatt cactctcacc atgcggagca gtttgcaggc    1440
```

```
ttggccaagc tcgtcaacag cggaaagtcc tgaagggtgt gaccatcaag ctgggtaatg    1500
acgtggactt ctcggctaac gcttcgatga ggtgatcggc aaggataatg acaacccctt    1560
ttccggcatt tcgatggagg caaccataca ataacgggcg tgatgatcag cgatccctct    1620
tgggattcat cggattcttc ggacaaacca acgaggccat tattcgaata caatcatccg    1680
caatgctacg gtcgtaggtt cggccccggc aggtgtctcg tttgcaacat ttacaacaag    1740
ggactcgtaa gcaactgcca tgctatgact gtcgaatcgt ttccgctcca tacgaaacga    1800
gcttcggagg cagggtgcag ggtctttggt tggaggcctt ttggatgaat ccaagataga    1860
aattgctctg ccactcgtgt ggaagtctat agccagagcc aaagcggtgc ttcatatccc    1920
aggcatacaa tctgtgcgaa gtaaagaatt gcttcgtaac gacagcaaga taatcgcaga    1980
cgttgggttg atcggtggat ttgtcggcaa aactttgctt tcttccccgg aaccgagtct    2040
actttctcca actgctatct ctcaatgtgg aagtcgtatc gcttgacagt ggtgatcaag    2100
ccgttctgga gggtttgtcg gtcaggtatc agccaacttc attgccaagc actgctcgtg    2160
tcagccaaag taacgggagg aaaaaatccc ggtgcttttg tcggttgacg gcagatgaat    2220
ccatgaactg caaatacgac ggttgcttct acaaaacgaa caaaacccgg gtatggtcgg    2280
cataggaaac gggcgtcgaa atactgccat cgcaggtatg ccggaagcgg caatgaagac    2340
tgccgatatg gcgccaagct caatgcagat caaaatcctg ctccctggct tcaggcaaac    2400
gcgcaaacaa cggttggccg tacctcaaag acaacaaacc ggtaataacc ctctggccgc    2460
tcccatttcc catgagatcc gtatttgggc tactgccggc ggatattcat tgcgggtgct    2520
cctgcgggca catctgttca ggtgtacgta tgcaaggaca tcggatttac aatgctgccg    2580
tgcttgcaga tcatgacttg cagttgcatc cggtgtatac gttgtacgag ccggtgacag    2640
cacagcaaag tgatcgttcc ctaagagaga ggtcgatagg aaaaagttgc atcctcatga    2700
gcgatttgtt tgccgcaagt cgtttgtgca ggattctttt aatgttgtgc ccggggatcc
2760
```

(2) INFORMATION FOR SEQ ID NO:870

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 556 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...556

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:870

```
agagcaagtt ttccatctcg ctgcctcgtc tgcgtcctgc cacgggcggt gggagcctaa      60
agatcctatt gacgatgtcg gtatggtaca gcttattatg ccttccgtct gttggataag     120
gatgtcgaga tcagcctgtc cacacggaga gtcgtgagtt tcgtgaccac gtgatgccgc     180
tcggtatcac ctcggtagtg ccggcagcaa gaccgaaccc ggaggatatg ccgaagagaa     240
tgccgtctgg agcaattcgc catcaacgat gcccgcagtc cggccgaaat ggctccgatc     300
ttcgccgact tggctacgag ccggtttgga aagactggga tgcttcatgt aacagaagat     360
tcttaccgta acgcctcgcg tccgaagcga aggatcttca taagaataaa ggcttgctct     420
ccggtcgagg aaagcagcct tgtccgtttt tggttttatc gtttgaatcc ttacaagcga     480
atacctaagc tacgtggaaa gaggtattct ttcagcgtag cctncaagtt tttagtctcg     540
gtttaatggc tttacc                                                     556
```

(2) INFORMATION FOR SEQ ID NO:871

(i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1368 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1368

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:871

```
acttccgttt tatccagaat gttcttaatc ctcggatcgg attcgtagtc gacagcagat      60
gttctatgag tcggagcagn accacatatc cggtcgttcg tctccgtgca tcgtagaagt     120
atagagcacg cgaggctttt tccctgtttg gcagaggacg tcagcttgca aatcatcagt     180
ttacgatcct ttacggcttg ccaatgacgg aagtagtaca aagtgatgga tactttgttt     240
ggaaccttcc atcatgctga tataggcttc ataggtgggg taagcattcc attctatttt     300
tctcctgagc ggtagtcgaa catctcgaca gcgcgctgca tggtggagga gtcaagaatg     360
taggcttgag cccatagcgc aggaatgcct cgactcctct tcgctggcat aggcaatggc     420
ttcattggtt acggggtcaa atcgtcgatg gacatgatca gagccagctc ttgtagaacg     480
gccctatcag cactttgaat gagaagtagg cctcgccccg ttcgtcaaag ttgaaataac     540
tttggcctgt tgtgcctgca tgctgccgat gaaagtcagc aaagcaacaa aatgccaaga     600
agcaaaaaat tcttttttctt cataaatagg ataattagtt tgttattgga ttcttgcagt     660
atccttttgc gagaaaaagg tgctcgtttt tgcataacgg tatggcagtg ggagcatatt     720
tttcgggcta aatgtctcgc aaagataaaa atattcctat gccattatct ttttgagcct     780
aaaagtcaat tgcatattcc acttagttga tagtttcagg atgggatgtt cccaaaggag     840
attgttgcat gggagtttca ttgagctctt ttgctgcaga gcgattctta gtgtcttcgg     900
gaaaggtcaa accttcggta tatggacaca gaagcaaaca gaaatttcat caagtttcca     960
ttagagaagt actcctttcc cgtcaaatca atgcttgtac cgataggcga gaaataagga    1020
atgattgtcg ctgattcttg cttcctgcac gatgcaggac gcgattgtca gctgattctg    1080
cttcctgcac gatgcaggac gcaattgtca gctgattctg ctcccgtaat gcgctaacta    1140
tcagctattt gcaactattt tataggactt tcattgagtc ttttgccgca gagttgattc    1200
ttaagtgttt ttcagattac ttgagtttgc agagagatcg catgaagctc tcctttcttc    1260
gtcaaatcaa tgcattatct gncttgatca atatgagggg ggaagggtta ttgtataacg    1320
gtccaaaagt gccttttccg gatcaaagtc caaataaaaa ccttgcag                 1368
```


(2) INFORMATION FOR SEQ ID NO:872

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 589 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVÀLIS

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:872

```
tacacgtgtc aagcccgtgc aactntccgc tttgctcgta acgatacacg tcccgaactc   60
ggcccaaacg aatcggtaga tcgcgatagg aatgtggatg atcntgaata tctcgcagtg  120
gtgagggcat tcattggctt tagcatgact cttctccttc ctgcggcgta ttgatcggac  180
ggaaagaatc ctgtcctatt tggcatagtg cccggaggtg atgtagagat tcttattgcc  240
gatatcggcg tgattacctg ttggtagcca aagtgcttct gtatctgctt cagaagtctt  300
ccaaacgcaa acggagctgt gtgcctcgcg gtagccaaag cggaagccgg cacctacatt  360
ttgggagaaa gcgaagagtt cgagctcctt acgatctttc gatggtcgcg cttcttagcc  420
tcttccaaaa gctcgagata tcatccaaca tctttttctt tgggaaagag attccataga  480
ttcgtgtcag tgttttctct tttcgtcgcc gcgccagtaa gctccggcta cacttaaaac  540
ttgatcgctt taatgtaacc ggtattgggt aagtgaggac cgcgacaag             589
```


   (2) INFORMATION FOR SEQ ID NO:873

       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:873

```
aatgatccgg aagccgatga agcgcgtctt tacggcgcaa tcccgatatg caggcgtcat   60
tcattttgct tgcaagtaag cccgtaggcg aatcggtgag aagccgcttt tgtactacag  120
gancaatatc ctctcactgc tgaatatctc gaactgatgg agcgattcgg cactcgtggg  180
atcgtatttt cctcatctgt acggtgtacg gacagccgga ggtattgccc gtaacggaag  240
aggctcgata caggaagctc tctctcccta tggcaatacg aagcaaatca acgagagatt  300
atccgcgatg ctatccatgc cggagcaggg tacaaggcta tactctgcgc tacttcaatc  360
cgatcggggc acaccccacg gcgcatatcg gaagcttcct aacggagtgc cacagaatct  420
gatcccttat ttgactcaaa cgcagcaggc atcagagccg aactgagcgt cttcggcgat  480
gactacgaca gcccgacggc tcttgtatcc gggactatat ctatgtggtg gatttggcca  540
agcgcatgtg gctgccatcg aacggatgct gaatgaagag aaagcgagga ttcgctcgaa  600
gtctttaata taggtacggg taggggcgtg agcgtgcgga gcttatccgt accttcgaac  660
gggtgacagg cgttgctgtt cctcatggat agtaggaagg cgcgaaggcg atatcgaaca  720
ggtatgggcc gagccaagaa agccaatgag gtgttgggtt ggaaagcttt ggagtcgttg  780
gaagcacact gctgagtgca tggcgttggc agcaacgctt gtcggagaag taaccgcagc  840
ccattaacgc acccgatacc ctatcttctg gcagatggac atctatcgac caaaatcact  900
tacctgaccg gcgtagggcc gaagcgggcg gagtactgaa ggaggaaata gaagtacgta  960
cctatctgga tcttctccat attttccctt tcgctatgtc gataggagtc gatttttatgc 1020
catacgggaa tacgctccga tatgccctat atccagcttg cgcggtgtcc ttcgcaactc 1080
tccgaggtgg gcgaaggacg gcgcaagcgg ctgacggcta ctt                   1123
```

(2) INFORMATION FOR SEQ ID NO:874

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 579 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...579

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:874

```
ggttcctccc caccatctat aaggcgcgcc agccagtaaa tagccgcgtg ggatcactgc      60
cccgaatact tttgataaag gcggatgcta tatcataggg agttcgcctc ccttgtcgaa     120
agcagcgggg ttttcttgca agcgctgcgt atcttttcgt tggtaatgac gagccggtct     180
tccacttcgc ttgtggcaga aggtcgagga tgttcagcag ctttcgtgca tcgcctccgg     240
cataggaagc agagcttccg tctcctccag tacaggatgc ttggcagcca gcagtcgtcc     300
cgatcgatag ccctgtgtgc caagtagcag cagatcctca tcatttgggg tttgagcaca     360
tagacctgac agcgcgatag gagcggacgt atacttcnaa actcggattt tcggtcgtgg     420
caccgatcaa gcgtcactat tctcgctcta cggctgccan aagtgaatcc tgctgactct     480
tgctgaaacg tgtatctcgt cgatgaagag gatggcgcgt cctcctttgt cgaacaggag     540
ccacgatgga ttcgatgtcg gctattactt cccgacttc                           579
```

(2) INFORMATION FOR SEQ ID NO:875

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 581 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...581

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:875

```
ggctctaaac ctgcaaaccg ctttcgagca gataagacct ccggacacat acagaaatca      60
gcgtgatgca atggatgata tcttctatgg aagcagcact gtgaatggta gcacaagaga     120
ataatctttg ccgagacagc gaaaatcatc tcggtgcgat tatctttcga ttccaatctg     180
```

```
cacacataca aatgagttcg ggcttcgtcc ggctccatga aactccggct cttgccaaac    240
cgcagaagag atagcagcag ctatctcttc gcagtcgccg ttatagacaa tagttgacaa    300
tggagaaaca agcggagctt ttcctccagt ttcgttttta tatcgggaag ttctcctgat    360
gagcacctcc tatattcgta atgataccat acaggggcat attatgctct ccaaacgttc    420
catttccccc atttgcgata tccggcctca aatataccga gagtgtgttc ctccgccatt    480
gccatacgga aggggtactc ctatctgcga gttatagctt cggggcgagc ggacaatgca    540
tagtccttgc gcaataactg ataaaggaac tctttgacga t                        581
```

(2) INFORMATION FOR SEQ ID NO:876

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1029 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1029

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:876

```
ggatgatttg gccaaggctt atggcgatca ccaggtgttt tccggagctc atacaccatc     60
gaaagaggcg aaaaggtggc tttcgtaggc aaaaacgggc cggcaaaagt accatggtca    120
agtgtatcat gggagagctg acagactcac cggcaagctc gaactggggc acaacgtgca    180
gctgggctac tttgccaaaa cgaagcccaa gagctaagag gggatctcac ggtattcgac    240
acgatgaccg tgaggccgtg ggcgacatcc gtctgcgcct gaacgatttg ctcgggcttt    300
tctcttcggg ggcgaagcat cggaaaagaa agtaagtgtc ctggtggagg agaacgagca    360
cgattggcta ttatcaggct tttgctacag ccgctaactt ccttattctc gatgagccga    420
ccaatcacct cgatatgcgc tgaaggatgt actgaaagag gcgatcaaga acttcgatgg    480
gactgtcatc tagtatctca cgaccgtgag ttcctcgatg ggcttgtcag caaggtgtag    540
aatttgcaga tggacaggtg aacgaacacc tcggaggtat atacgacttc tccggacccg    600
ccgtatgcag acgctgacag agctggagcg aaccactcga tcgaaacaaa aaccacacgg    660
gaggctatac ctgaaacgga agccaagcgg actaccgtcg gcaaaaggag gtagccaaac    720
agctgcgcac gttgggcgaa ccgtagcaac ctgcgaggag cggatcggaa aattggagtc    780
ggaatacagg caatagagat gctactgcaa gatccgaaac atgcgactga cgcaatctgt    840
tcgagcgata cgccggcatg aaacaagaac tcgaaaaggc caggaggact gggaacaggc    900
ttccgaagct ttatccgaag cccaaggata actcaacctc ccccctctct tctctcctcc    960
tttaccaaga gaccatctca caccaatcta ttagaagctg agacaacctt cgccatccg   1020
tccgaaagc                                                          1029
```

(2) INFORMATION FOR SEQ ID NO:877

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 545 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...545

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:877

```
tgaacaaaga agctctgtcc tatcgtttgg ccggcaagga cattgcagag tgaatgcaat    60
ggacatcaag actcttattg aatgggtaga ttctctggtg aacatctgtt ggatacgcaa   120
cgggctattt ctatagaaat actgaaaaga tacggacacg cttggggttt cttaaagatg   180
tggggttgga gtacttacga tgaaccgagc tgcagcatcc ttatccggag gagaaagcca   240
gcgtatcgtt tggctacgca gatcgggagc aaactggttg aggtcttgta catatggatg   300
aaccgagtat cggtcttcac caaagggaca atcttcggtt gatcattcgc ttcaggattt   360
gcgtgatata ggcaatacag tggtagtggt gggcatgatc aggatatgat gctgcacgcc   420
gactatgtaa tagacttagg acacgagccg gcagacatgg tggtgaagtg gtgtttgcag   480
gtagtccgga gagatggtgc aggctaatac cctgactgcc gattatataa gtggacgaag   540
                                                                   545
cgtat
```

(2) INFORMATION FOR SEQ ID NO:878

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 1088 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...1088

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:878

```
gtcgagttgc atagcgaact cggcgggtgc cttgtctttt ggaatgagtt gggaacctta    60
tttcggacta ttcatcatag gagaaaatgc tcttttgtcg aaaccggatt ggcatacggt   120
agataagaca aagataatag gagagtgggg gtaaggagca taaatggatg aatatacgcg   180
ttcattatta agccgtttta attcggatga taagtgttag gatagagata tttagcttcg   240
ttgaatcgtt tgtgtttttg caaatgtagc caattcctgc gacttccaag aggctgatga   300
actatgtgtg tcatttgtgt ctgtcctgtc gattgctcat aagagggcag gggatggccg   360
ttgctcgaca tggaaataag agagctttgc tgatgctaca taaggtgttc tatttggtac   420
gatgtacggg gataggcttt gttttttccg taagtttgta ttgatattgt ttcttgcata   480
cacattcaaa ctattgacag catggcaagc gaaagaaaac tgaaaaagca gataaccggg   540
ccatttccga agtctttact gatgcattcc tgctcaaact ctttgtgaag aggaaaaaaa   600
cgcagaggtg gaaactatcc tcaatcgtat tctccaattc aagataccac cattgccaag   660
attcgttgca acgacggtaa gcacaacctg cactcgtaaa gaaatattat cgccggctcg   720
tggatgattt caaggagagc tgtccgagat cgtgaagagt atttcggcgt gtgcgtctga   780
taatgatttg tcacttacgt gcattaagca gaaatagcgt aacatataga ggttttttgaa   840
```

```
gtttttctca cgattgttgc tcaggatgat gggctggaaa gcctcgtccc atctgcaaat        900
ccgctccaaa gcgtcatttg cgtggctcct ctaccagcaa ttacgacttt ttgctgggca        960
aactctacta ttggtctatc gtcggaaagc cggcttcctg atgaaaaagg aatggttttt       1020
cttccctttg gaccgatctt cagggctatg ggaggtatcc cgatcgatcg ctcgaagcag       1080
gttccact                                                                1088
```

(2) INFORMATION FOR SEQ ID NO:879

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1856 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1856

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:879

```
agccggtatc gtagtgaaga aaggattgct gtaccgcaag agaaatggta cataaccctg        60
ttcgagcaat tctatggcat gccatttgtt gtagaactcc ctatcggctc catacgtacg       120
accgtgagca ctttggtctt cacccctccc cttcaagagc agagctgaga gccaagctgt       180
tgattaccgt ggccagatac ccatctgatc tcctttgaca cggtcgaatc ccttggcggc       240
accgccactc cgcggaagat attgcctcct ccgatgacga tgccgatctg tacgccatgg       300
cacaagcctc cttgatgtcc gaagcataat cggccaaccg attgggtcga tgccgtattg       360
ctgagcaccc atgagcgact caccgctcag ttgagcagca ctcgtttata tgcagtcatt       420
attcttttct atcagtttgt tcaaagaaaa gcatattttc catacccat tcgtcgatag        480
acgctgtcga tggctgtttt cactccagac gagagagcat ctcttcgccg agagcacgct       540
tttccggatg tgctccacca cctcgacgat gaagggattg ctttcgaatc gcctcgcacc       600
tcatcgaaat cgcggtgttt catctcccct accaggttat tccgaagcct acctgactgt       660
gcatttggaa ttccttcttg gcatcccata gagcatctca tccaagcgaa tcaccgaacg       720
catccatgta tgcacagttc ggctactttg gatcgagtga gatcctcggg gttcagttcg       780
taccttcgag cagagcgttg tatgcccagc accattcata gtcgtagtat cggtatgaat       840
ttccttcatc cgctcattca cctccgcaag gcttttgatc ttccttcttt gatcaaggag       900
gcaaggcggt ggatctgttg ttgtggagcg acatgccaca gatgtccacc cagctgccgt       960
ctccctcatt gtgagtcggc tgagagcact cagcacctcc tcatccgtac ggcaaggaca      1020
atcttcaagc gtttgatgat ggaattgccg aaaaacttgt tcagccccat ctcatagaca      1080
tcagcccctt gtccaaggca gaagaacgta tgcgcatatc atgatagcat aggtttgtcc      1140
ctcactgccc agtatcttgc gtagcttttt cagcttcgac tgccgcgcat catcttgccg      1200
gcagtgaaag gactcaagag attgagttga tattgtccag caaatccgga tctttacgct      1260
tatctctcgc cggcacttct tggcgtcacg aatcgtcccc acactgcgda gattgatacc      1320
cggaccaaat acgattcgtt acggtcctct atgatataag agaaggggaa ggcgagctgt      1380
caatatggtg tacgtgtcga cccatcacca acgtgaaaag gcctattctg gatggccaaa      1440
ggatataaga gtcgctcgtg gtcttcgagc gcgctccacg atgccctgat ggatggggcc      1500
gagcttgtag aggtgattgt ctggttagag ccgctgccgg cattgaggaa agagtataga      1560
ccggcaatag caggctcgac ttgtgcatcg acacggtata tggcccggca aagacggaca      1620
ggcctcgccg ttttcgcctt ggcagttggc aaagaaaagc gaatcagtgc agagaaaagg      1680
tgccccaaat gagtaccctg ccctacaaaa cagtggaaac ggtagcacca tccgtaacgc      1740
tgctgcccga acagagaatg aaatgcggca gacgacattg tagcctaccg acacggggc      1800
ctctttcttg ctatgatact gccgttgcag agatgcgagg cacccggtga tctcgg          1856
```

(2) INFORMATION FOR SEQ ID NO:880

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 1025 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1025

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:880

```
ccttagctgt cccgtcgagc ttggtcacgg caagggcatt cacttcagtg ctgcggtgaa      60
ctgccttgcc tgttcgaaag cattctgacc ggtggatcgt ccaataccaa taaaatctca     120
tgcggagcgt cgggcactac cttctgctca cacgcttgat cttcgtcagc tcgttcatca     180
gattgacctt attgtgagac gtccggctgt atcgatgatc acgacatcga cgccgttagc     240
cacggcgaac tgactgtgtc ataagccacc gaagccggat cgctacccat ctgcgcttga     300
tgataggcac tcctactcgc tcggaccaga tctccaactg ctcacggccg cagcacggaa     360
ggtatcggca gccccgagca cgacgctctt gcggcctgac gaaagcgatg tgccagcttg     420
ccgatggtag tggtcttgcc tcgccgttta cgcccactac catgatcaca taaggtttgg     480
taccggaggg aggtcgaagc tgtcgccatc ggccgatccg ttctccgtga gcagcgaggg     540
atctcttgac ggaggatagt cgtcagctcg gaggtggaaa catatttgcg cgagccactc     600
gttcctctat acgtttgatg atcttcaatg tggtatcaca cccacatccg aagtcaccag     660
cacgtttttcc aattcgtcca agacctatcg tccactttgc tcttaccggc tacggcacgg     720
gtgatcttgg cgaatcgttt tctttggtct tggacaggcc ttcgtccaaa gtctcttttt     780
tcttttcgag aataatccga ataatcccat atcgtatata ctgttatatc tctccttagt     840
tcattctgtt cttgtaatcc tcataatcga accggcgcaa cactctttct tcccgtcggt     900
gcgcagcagt acgatgtccg gatggcgtgc acgttgaaca tgtcgtcttc accgcggtag     960
tggagcatgt ctcgaatatc gtcatcgcca ctgcacgcga tcgaaactca gtcaccgatg    1020
aagcg                                                                1025
```


(2) INFORMATION FOR SEQ ID NO:881

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 490 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:

(A) NAME/KEY: misc_feature
          (B) LOCATION 1...490

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:881

ggggatctcg ttctatactt ttcagacgat gagttacatt atcgacatta tcgaggtcag   60
gtgcagcctc taaaacgttg gatagattac gtcttctagt ctctttcttt ccccagctgg   120
tagccggccc catcgtccgc gcccgagttt cattccgcag atataccgcc gtccggtgtt   180
ggaagggagg gaatatccga agccctgatg ttgataatgg gaggtctctt caagaaagcg   240
atcattcgga ctatatcagc ctgaactttg tggatcgcgt gttcgatgct ccaagcttta   300
caccggattg gagaacctta tggggggtgta tggctacgcc ctaagatcta ttgcgacttt   360
tccggttatt ccgacatggc tatcggtata gcctggtgct cggcttccgc ttcaatatca   420
atttcgattc accttatcag tggccaatat caccgagttc tggcgcaggt ggcatatctc   480
tctttcgtca   490

     (2) INFORMATION FOR SEQ ID NO:882

          (i) SEQUENCE CHARACTERISTICS:
               (A) LENGTH: 648 base pairs
               (B) TYPE: nucleic acid
               (C) STRANDEDNESS: double
               (D) TOPOLOGY: circular

         (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

         (iv) ANTI-SENSE: UNKNOWN

         (vi) ORIGINAL SOURCE:
               (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

         (ix) FEATURE:
               (A) NAME/KEY: misc_feature
               (B) LOCATION 1...648

         (xi) SEQUENCE DESCRIPTION: SEQ ID NO:882

gcaaggagtt cggcttcggc tttcgctatg gaatcctgcc gagctgcttt atcgcagcct   60
tacgctgcgc ttctatttcc tgcggatcgg gacgattggc catgaaaacc caaagatcac   120
cagtccgatc agaactaaac ctataacgta tttttatcca tatattttcg ttgcgtaggg   180
attcttcggc accgactcgg cacccctatc ttgttgcctg ttcgctacgg tatgtcagag   240
gggagaaaaa tttcacaccc ccccaaagaa ccgacaggca aagcgattat tcttatcttt   300
ttttctcgtt ttgattgctt cacgaatgaa agccatgaac aagggttggg attgaccacc   360
gtactattgt attcgggatg gaactgtacc ccacgaacca gcggcaggca ggcacttcca   420
cggcttctac caagcccgtc tcggattctc gcccacacat tgcataccgg cttttttcgaa   480
agcttcgcga actggctgtt gaattcgaag cgatggcgat ggcgttcgcg cacgaattct   540
tgccataggc agcagccaat ttcgatcctt tgcgcagagc acagtcgagc gcccaaacgc   600
atggaaccgc catatccgta accgctctgt cgtcatcggt cgtgacct   648

     (2) INFORMATION FOR SEQ ID NO:883

          (i) SEQUENCE CHARACTERISTICS:
               (A) LENGTH: 386 base pairs
               (B) TYPE: nucleic acid
               (C) STRANDEDNESS: double
               (D) TOPOLOGY: circular

         (ii) MOLECULE TYPE: DNA (genomic)

```
(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
      (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
      (A) NAME/KEY: misc_feature
      (B) LOCATION 1...386

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:883
```

```
atagggtgag cttatcgcag gcgttcggct gcccgtatca tggcttcatc gctcctatgc      60
cacgaatggc cagatagtgc aggatgatgg agactatcgc atgcagagcc aaaaacggaa     120
tccgaactcc aagttctcag ccgagcaatc tgccaaatct gcatccccag atagataaga     180
aaacctatcg tgacgagata ttgaagatac atagtctgat ctgcaagatt cgcttttgt      240
agaggagatg gtagcaaacg agatcagtac gataatggca tcaagagcaa aaagcccaa      300
gtggacttga ccagcgcatt ggtagccggt gcatatagtc ctatatggtc atcgcgtatc     360
cttggccttc cggccttatc aaaagc                                          386
```

```
(2) INFORMATION FOR SEQ ID NO:884

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2415 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...2415

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:884
```

```
tggtttccac ttgactccaa gcgtattgac ggcttcctgc ttgtccacga gccgttgtat      60
ttgagcacac cccagctaaa tagcaggaca aaaactgcat aatggcaatg atgattactg     120
ttcctttttt catattcatt ctatgttacg ttactattag gtttatctga atgtactact     180
tacgacgtct gacagggttt tgtctttctt gaccgaccag ccgaaatagc cgagaaagtc     240
cccaacgaga agtattcgcc atgcgaatat gccagcaggt ttgctttctc catacgaaag     300
aacctgtctc cgggttgata tattgttcgt cggcacggat attaccacat cggccataaa     360
catgtcatgg ctaccgagtg gaatgacctg tctaccttgc actctatgct gaccggcgat     420
tcggccacca aaggagcttt gtcagcttgg ccggctccac ggtaaggcct gtctcggcaa     480
acttgtcata tccttgcccg aacggacacc gcaccagtcc gtctgtctgg ccatgccgac     540
gtagtcaggt tcaaaccgaa ctcgccactc tctttgatga gagcatagag tgacgctccg     600
ggcgaatact gacatagcac ataggcggct ggctgcaatc gtccccaccc aactggccgt     660
aagcaaatta taatcctccg gccggggcca caactcacca atatggccgg tagcggatag     720
ataagtgtgc cgggttccaa tcttgtctca ttgtttcatt cttagaaaac ttacgcaaac     780
tatacaactc gatgcggtca ccggctagtt ttcgctcgca gtagtcgcat cgagggtgca     840
ctgctcggca tctatcacac ggaatcgggt ttgcatcggt tcttgttcgt aatacacttc     900
ggattcggac aacggacgag acccacaatc tgtgtggtac ttccacctga cgttttctta     960
caacttcata gtcccgaata tgttcaggcg cacattcggg gcaataagag cgatgcggtt    1020
```

```
caattcctct cttcgaaagt cttgtcctct atcttgataa ctcctttcga accatggccc    1080
gactgcgcaa attgttgccg atggtgatcc gcttgtccaa atcatccgtt gcaggagagt    1140
agccaccttg aacagtttcg tcggggggat atggtcatca cgatgccgtt tctaatcgcg    1200
gcgacgagca tttcttcctt tttcatacaa tatctgctta gtttgcaacg tctatgccga    1260
gcacttcaca aatgtggact gcctcgtata aagcccgttc agtgcttgcc ggataaagta    1320
ggcttgggat tgtcatccac atcataggca atctccccca cacgaggtag cgatgcagta    1380
cgcgcagatt cggacggctg tcggacagca tagcgttggt cgcacataga catctttgac    1440
ccgttcatat tcctccagat ccgtaaaccg tcacgttgta ctcgtgtcat gtagagaatg    1500
tcgcagttgt tgatcacctt tcgtcgaaat gtttggtttc cgtataaggc agatcatgct    1560
ctcgacaaac tgcttgtatt cttccggaag agacagctct tcgggagcaa cgaagataaa    1620
cgagggcgga agtgcgacat accctctatc agagaatgga tagtactcca tacttgagat    1680
cccctaccat agcgatagtc ctgtcataca gcgtgcctgt gttttgcgaa tggaatagag    1740
atccaataaa gtctgtgaag gatgtggttg gctccatcgc cggcgttgac taccggcaca    1800
cggcttacct ccgagcataa cgagccgccc cttccagata gtggcgcata ataatcagat    1860
cgcatagttg cccaccatgg aaatggtatc cttgagcgat tcgcctttcg tgagctggag    1920
gtggatgcat ccgaaaaacc gatgatacgg cctccgaggc gttcacagcc gtctcaaaac    1980
tcaggcgcgt acgggtagaa ngctcaaaga aagagtggct acgaccttac cctccaaaag    2040
gtgccgattc ggattctttc gaatagctct gcccgatcga gaatgcnaag aatgtcctcg    2100
gncgaacctg gtcaatagat acnatatgct tcatctttta aggagtataa ttgattaatg    2160
atatggacgg aagcaaagct cacttcaaag cgaaagaagc cttaacgtta tgcttgccgt    2220
cttcatcttg gaagacgtat tgaacgaacc tcccagctat aatcttcgnt cgagttgagc    2280
cccactatct ggaacacgcc catgaagaag atagcatctt acccacggag gaaccgctcc    2340
cctccgcaat gacgaacacg attgaaagcg tcttcgaggc attgcgcagc atctccacct    2400
                                                                    2415
tagatcattg agctt
```

(2) INFORMATION FOR SEQ ID NO:885

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1116 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1116

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:885

```
tcagcagatt tggttggctt ttacggccaa aaagcccacg ttgggctatg cctataagta     60
tcagnccgag cgagtaggta ctcgtctgca gcatgtaact atcaagtagg gcgtacgggg    120
ncggtcacac ctgtggccaa tctcgaccag tactgatatc cggtacggtc gtgagacgcg    180
ccagcttgca taatgcgatt ttattgcgga gaaagacctt cacgagggag actttgtcta    240
tgtggaaagg gtggagagat cattcccaag atagtgggtg tggatacgga tgcagcagta    300
tcgatggcag acctatagtt tttacagtgc tctgtccaga ctggctacac cattggtacg    360
cgaacaggga gaagctgcct attattgccc gatgccgagg gctgcccaca gcagcagaaa    420
ggacggctcg aacactattg cgacgcaaga cggcagacat caatatcggc ccggagacga    480
tcgaattgct tatagccgca atatgattcg taacgttgct gacttttatg cccttacgga    540
gagcagctac tcactctgcc cggcttcaaa aaacgggctg ctgccaaatt ttggacagta    600
tcgaagcctc caaagcccgt ccgtatcagg ccattttttc ggattaggta ttcgctttgt    660
cggagaaacc gtagccaaga aacttgtgcg gtctatcctt ctatcgatgc cctggctgct    720
gcgacgagcg aggaatagta cagatagacg agatcgggga aagaatagct gctgctgtac    780
```

```
ttcattttttc agccttcggc agaacaggga gttgatcgaa cgacttcgtt tggcggtgta      840
tcgttggaag ctgagacagt ttccgtggcg gtttccaatc gttagccgga aaaacggttg      900
ttatcagtgg tacatttgaa aagcgtagtc ggatgagtac aaaagctatg gtagaggaca      960
atggcggacg tatggcccgg tcgggtttcg tccaagaact tctttcattc ttgccgggat     1020
cggatattgg gcccgaagtt agagagagaa agctgagaag ctcggtgtgc cggctgatag     1080
tgaagaagga tttcttccgc tgatagaaga ataggt                              1116
```

(2) INFORMATION FOR SEQ ID NO:886

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 621 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...621

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:886

```
gagacacggg ctgtagcttc ggctgtctgg gattgggcga ttgtgtggag cctgcggatt      60
cgatgctatc cgcatcaacc cgacaacctt gctgccggag tggtggagga tgcttgtacg      120
gcatgtggtg cttgtgtcaa ggcctgtcca aatcgatcat cgaactccgg aagaaagggg      180
cctaagagcc gccgtacttt gttagctgcg tgaacaagga caaaggcggt gtcgccaaga      240
aagctgtagc aatgcttgta tcggctgctc gctctgcttg aagcaatgcc aattgaggct      300
atcaccatcg agaacaacct ctcgtacata gaccacacca agttcgcatg tgccgcaagt      360
gtgtggaagt atgtcccacg aatgccatcc acagctgaac ttcccaccga agaagaaagt      420
ggagccggct gtcgccacag agctgccgca ccggcacaag agactgtcta aggaataaat      480
aacaacaaag ccacatagaa ttattatgtt gaggactttc cgaatcggtg gtattcaccc      540
cccgaaaaca agttgtcggc aggcaagccc gtagaggtgt tgcctatccc tnacagtagt      600
catccctctt ggtcagcaca t                                              621
```

(2) INFORMATION FOR SEQ ID NO:887

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 582 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
```

```
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...582

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:887

cggtttggat ttggctctcg gtgtaggcgg ttaccctcgc ggacgtattt cgagatatac    60
ggaccggaat cttccggtaa gaccactctg gctatccagc cattgccgaa gcgcagaaag   120
caggtggctt ggcggccatc atcgatggga acatgctttc gaccgcacct atgccgaaaa   180
gttgggcgtc aatgtgataa tctctggata gcacagccgg acaacggtga acaggctttg   240
gaaatgccga gcaactgatt cgctcttctg ctgtcgacat tatagtcatt gacttgtcgc   300
agccctcacg cccaaagcgg aaatagaggg tgaaatgggg gacacaaggt tggtttgcat   360
gcccgtctga tgtcgcaagc actgcgtaag ataccggagc catcagcaaa tccaatacaa   420
cctgtatctt catcaaccag cacgagagaa gatcggtgtt ttgttcggca atccggagac   480
caccacaggg ggaatgcact gaaattctat gcatccatcc gcatcgacat tcgcaagaga   540
caccgatcaa ggatggcgaa gagatcatgg gacacctgac ca                     582


(2) INFORMATION FOR SEQ ID NO:888

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1545 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1545

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:888

gccggcaaaa tcctgattcg aagcgatcta aggaaaagaa agaaccctcc atcatggcaa    60
aaagcatcca ggcataggtg cctaatagat agaaaggctg cgcagggtca gaacatcctg   120
tatggtttgg agcgtatggg tagagggtag cttggcgaaa tctggtacat aggcatcccc   180
ccgaagagac tgttggccaa taggagtgtt ctcctgtctg tgcctcccaa tcgcgtacgt   240
cctgcccgta ccgctggctc ccgctacgtc gccctggaac agtacacgcc cgtcaatgag   300
gcgggataga aataggccaa agcgagggct atgaaaagga gtagaccgca gcataaggta   360
ggattttgcg ccaatcaggc tttgtcttat cgtggtggtt acggttccgg cagcagctgt   420
cggcttttcg ttttctttca tatgtcgttt gtttttcggt tacaaagtta aaaaaccatg   480
tgattggctc gcctacgacc aactgcttct ctgaacgttg agcagagaag tatcctccga   540
cattgttatt gtatgcaaga ggtcagaaaa tgagcagttc aaaccttgga caagctctct   600
ccctattcta tatacatatc tgaggacaaa gcgaaacatt gaggaaagag gcggcatcca   660
tttgtttctt gccgggcatt tggagcagag tatacgtatg acccctttgc gtgtcatcac   720
gtcgaggttt ttcttgccca tatgatggag ccgaatcggc ctctgtgtcg cggttctcgt   780
ctatacttgg gtaccgtata ttttcagcac gatggactca tccttggacg atgagcttgg   840
tccaagctgt aggagcaggc gatatgctgc ggatgaaatt gttacctctt cagccggttt   900
gtcccaatcg atacggcagt cgtctttgaa atcttcggag ccggtcgagc atcaacatag   960
cccggaagtt gctcctgagg atggagacgg gttctccttc gagaaacaag tccactgtgt  1020
gcaccaatag gatgcaccga gagtagccat acgttcgtac aattcgccga aagtctctca  1080
tgtcctatag gcaacttctc ttgcagcagt acttcacccg tatctattca tgccggaggc  1140
ggaaggtggt aactcccgtt tccgtatcgc catggctatc gcgtggttga tagggggctgc  1200
tcctcgatac atgggcagca gagagcatgc agattgattg ttcccatggg gggcatttgc  1260
catacggagc gaggagcata cggaaagcca ctacgatttg caagtgcggc tgataagtcc  1320
```

```
gtattcatcg agaaaagatt cctcgttcag attgtccggc tggagaatag gcgacccaat     1380
tcctgtgcgt atagtttgac catactggga cttaccttat gcctcgaccc ataggcttgt     1440
ccggcatagt gaccacagct tttacttggt tccgttttcg accaaagctc ggagtgccgg     1500
aacagcaaaa tcggccgttc cataaaaatc aatcgtagtt cttct                     1545
```

(2) INFORMATION FOR SEQ ID NO:889

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 626 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...626

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:889

```
gtggctccgg aagcgatcac agcttcttgg actatatttt ttcgttagag gtggagtaca      60
ctttgagcaa aagcgtattt acacaagacc ccaaaaacga ctatcaatag agtagacctt     120
tcattaggca gtacatctcc ttctcttgat ttaatacttg gccactaatg ggagtcgtat     180
tcgaaatgaa taagaacttg atggcttcga cattggtttc atttccaact ttgtggacta     240
tgatcccgct atgcgtggtc tgaaccgata ataatagaag aagactgtgg atggctgatt     300
ttaatccttt gngagcacta agtatagaga tccaaatgat gttgatgaca attcggataa     360
taccgtgggt ggagaacgct cccataactt ccgatcactt acccgggcca ttacgtatat     420
ccgaagcaat ctttcaatta tctcccggac atacaccgac aaagaaagat ctggtcttta     480
aacactgtat ggtattccgg ctttggcata ccgataagga aggcgatcgt tatctggaca     540
cttttcaaga tcaccaatct aatgagatac agatgggatc aaatacgaga cattactctt     600
tttatggttg gagttggnca tatgta                                          626
```

(2) INFORMATION FOR SEQ ID NO:890

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1327 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1327
```

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:890

```
ggccgactgg gcttcctcac cgatgtcgat tgccacgagg cttcggagcg atcacacgcc    60
tgctggacgg cgacttcacc atcgagaccc gttccctgtg gaagtgaccg aagacaacgg   120
ctcctctccc tcctacgccc tgaacgagca gccatactca agcgtgaaac cggttcgatg   180
attcgggtga atgcctcctc aacgacgact atctggcggc ttacgatgcc gacggcctcg   240
tggtgccacg ccctccggct ccacagccta ctcgctgagc gggaacgggc ctatatcatg   300
cctgcctgtc ggaacttcgt ccttacgccc atcgcccccc actgctgaat atgcgtccgc   360
tggtcgttcc ggacgacacg gtgatccgcc tcaagtggat tcgcgcagtc ggaattacct   420
cttggtgctc gacggacgaa cagaacgttg ccctgcgata cctccatcct gctcaaacga   480
gctcctcaca gctgcgaatg atccgtctgc gtccgcactc cttcgccgaa accctgaggg   540
taagctcatg tggggagcag ccgtaagata aagacacttg cgacggtgac aacgagccaa   600
cggacactta ccatagacta ctcccataat ggaagaaata caaccatggt gctgcgcacc   660
gaagatctgg tcaaacgcta ccggaacgta cggtcgtgaa tcacgtatcg atagaggttc   720
ggcaaggaga gatcgtggga ttgttcgggc cgaacggagc cggcaagacg acgactttct   780
atataccacg gggctggtcg tccccaacga aggacggata ttcctcaatg atcggacatc   840
acccaatacc ccgtctacaa acgagcgcgt gccggcatcg gcatctggca caagaggcat   900
ccatattccg caaaatgtcc gtggaggaca aatcctctcc gtcctcgaaa tggccggact   960
gcccaagacc tatcagcacg aaagctggaa agcctgatag ccgaatttca ccttgagaaa  1020
gtacgcaaaa ccttggcgac cgcctctccg gcggcgagcg acgccgtgcc gagatagccg  1080
ctgcctggct atatcgcctc gcttcatcat gctggacgaa ccctttgcgg tgtcgatcct  1140
atcgccgtac aggacattca ggccattgtg gccaaatcaa ggacaaaaac atcggcatcc  1200
tcatcaccga ccacaacgtc cacgaacgct tcagcatcac ggatcgcgct tacctccttt  1260
tcgagggcaa agtgtgtatc agggcacggc cgaagagctt ggctgcgaac gaagtcgtaa  1320
gggaaag                                                            1327
```

(2) INFORMATION FOR SEQ ID NO:891

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 316 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

      (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

      (iv) ANTI-SENSE: UNKNOWN

      (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

      (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...316

      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:891

```
gggtttctca agaagcacgg tggtggacat cgtagagcat caaggcattc cactgctatc    60
gtggatgtgt ccttcacctg ccacatgccg gactgtctga gatgccttac aaacccgtca   120
ttcgtggagc gcatcaggag ccggtaccgg cctgcccaca tacaggatag gcggatgcag   180
ctgtctgagc ggcgactcat cggtgactgg agtttcgatc ggccgttgca ggtgggcgat   240
gaactatatt cgaagacatg ctccactaca cgacggtgaa gaacgaccat gttcacggtg   300
cacgccatcc ggacat                                                   316
```

(2) INFORMATION FOR SEQ ID NO:892

        (i) SEQUENCE CHARACTERISTICS:

```
        (A) LENGTH: 2872 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...2872

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:892
```

```
gctcgggacg gatttccgtc ggcacctgga aggtagcacc accgatacgc ggctcttcac      60
ttctacctga ggagtgatat tatcgagagc cgccttccaa tctcgagggc agacttctct     120
tcgtttgagt gcttcgtctt cacgatgcca aagcaccgta gaagatactg aaagctgtgt     180
tcttctttcc atcataatta ggtgattaac gaacttagtc accctcacat caccatagac     240
gggatcggca ggatctgtct ttttttaggt tttgcttttc tcattgtctc aaaaatttcg     300
tttttgtcga ttggttgccg tttcattttt gtcttcaacg ctccgccgga gcatttactc     360
aaccctgttt aagcctatcc aattgaactc aaaccggttc ttaaataatt tgttggttgc     420
gcccttgatc gtagcgcgat ttagattggg gaagtgattc gtccttatcg gtctccggcc     480
tcgctcatcg ggccgacgag tccgcttagc ggctcttact tcttaccttt agcggcaggg     540
cctgtccggg cttcggacgc ttggcaccgt atttggaacg acgctgcgac ggccattcac     600
acctgctgta tcgagcgtgc cacgaacaat gtgataggca caccgggcaa gtccttcaca     660
cgacctccac gaaccagcac gatgcttgtt cctgcaagtt gtgaccctct ccggggatgt     720
aggcattgac ttcttggaat tcgtcagacg cacacgcgcc accttacgca tagccgaatt     780
cggctcttgg gcgtagtcgt ataaacgcgc acacaaacgc cgcgacgctg cggcacgaat     840
tcaatgccgg cgatttgctc ttatccgcga aagattcacg acctttctaa ccaactgttg     900
aattgtaggc atttcttctt tctttaaaac ttgattataa ttatctcttt cctaatctat     960
tacactgcca actatacgag agtggcgcaa aggtacatat attttcccaa tccacaacag    1020
tccccgcagt ttttttttcac ggcaacgctc taatactcaa tagtatcaac cgacatctta    1080
ggccgaactg ttccgcccga gcgagagatc cgaaaaggtg gatgcgcccg aaaagaaaga    1140
gaatacaaaa cagcccgaaa aagtgagata cagcgtcagc cacagaaaag aaacgcactg    1200
catatattca cagaaaagaa acgcatgcat atattaatgt acgcgcgcga gagatgctga    1260
gggcagcact attcgtccaa agagagaaaa cggaacggaa aaggacaacc atccagcaaa    1320
ccgttacgcg ccacaatttt ctgtttcgat gctccgcaaa acgtggcgcg ggactttttc    1380
gttttggttc gggaagtaaa aaattctcgc gccacgagga aaaattctca taagactttt    1440
cccgaaaaca cgcgccgcaa tcagagcaat atggttcgag aaaatcagat cggaatatat    1500
ccgcccaaga gcgagagggt agctatgaag ctgtaccgac agcctcgatc gccacaataa    1560
ctaccgcatc agcgaagccg tcagagccaa gaagagcaag caatagacca caacgagatt    1620
gtccgccaga agctccgcca ccaagagcag aggaatagct gcttgtgtcc cagcaaaaca    1680
aaaggaatag gagcaatgca ggtagcccgt atagcacccc acccgggcat cgctgtagaa    1740
aggtagggcg agaacgttca gcaaaatagc tggcaggcta tgtacgcctg agcgataatg    1800
tgctccgtca gatatatgct ccggctcctt tttgtcggaa agccgctttc gtactcacgg    1860
cggaatggga agaatactga tgatcctgac agccttgttg ccttgaaacc attcatcagc    1920
aggctccata ttcttgaaaa gaaagggagg gacttcaacc atttttctgc tcggtgacaa    1980
acctcatttg tttgtaaaaa aaggctcttt ccccgtgtgt cgctcggcaa tcatttctcc    2040
gctatcgctg ccgactgctt attctccttt tgcaaggagg atatttcttt ttgatccatc    2100
cgatactttg acgcgtaagc tcttcgccaa tgggcttttt ctgcaaggga tcaggtcgat    2160
cagttgtgca aagatgatgt acagagaggc cagcacgaaa agggctgaaa gggacggaag    2220
tagacaaccc tcttgccacc gataaagtcc cgtacaaata acccgggcgg tagagcagct    2280
ccacgatagt acgcccgaaa ccgtgtcgat attggtgaag ccgcctatca catttcggat    2340
catctgccgg aatgataccg tccggtgcga gaggtttgtc cgcagcggtt gcagaaattg    2400
ccgtatatcc atctccgcag ttttggcata tatgtatgta tgggtctgca gtggagtcgc    2460
tctgccacgc atcagtctca actcgaatgc gcggattcga cĉcgaagggg aaagagaagt    2520
```

```
gattgcaacc gctgatcgat ctttcttgca gtagtctgcg cttccgtagg attgcccaaa    2580
aagccagccc ggtaatgcag atattcccca ttgtcccgaa gtggccaaat cttctattgc    2640
caaccaagga gcgatgcaag catgaggatc tgcaatgagt tggccatttt tctctcgaat    2700
gcccatgctc cccgtttttc tgtttcttcg aagtactatc gcgcaacctt ccattttttt    2760
cttcgttttg ctactcgttt gcattatctg aattcacttg cttgcgtaca aatatagtta    2820
tgacaaatgg agggcgtagc acctcggttc ggtcgcttac gggtgagctg cc             2872
```

(2) INFORMATION FOR SEQ ID NO:893

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 542 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...542

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:893

```
gtaagaacgg gatacagggt cgaaatsggg tatgcttatg gcgggtatgt aaactttccc     60
gtctgacggg gtaccacata atactcgatc gtacgctgcc atcggcaccc gaagtactta    120
tgcgaaggct gctctcggcc ttggagtgta ttgttcgaag ctgtcgggaa atctcacttt    180
gggatctccc atcaactgat atttccgctt ccgttaatta cgagcttgag tgtaagggct    240
tcgttgtttt ggcctgacgg tcattgaaag aggctgagat ccgataatta ccaaagcacc    300
atcgaatcct tggggtttcg gttcaggcaa gggagcgaca tctttgtgac cggattggtg    360
gtcagagtcc tccgcacatt ctcatacggn tgagtacaaa gaagtcatct atgtcgtcta    420
tctcccgtcg gaccgntact agacacgaaa gttgcccgat ggaatagtca gcttaccgct    480
tttttgagga agagcaacga ctgcttgaga acggttgtct gatagttccg tccttcatac    540
tc                                                                   542
```

(2) INFORMATION FOR SEQ ID NO:894

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 865 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature

(B) LOCATION 1...865

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:894

```
gtcagattat gtgcagcctc ctgtggtaac aagaactgct ccccctcgaa gaaaggtgca    60
ctccatccgt atcggtacgc agaagatgaa atacggcacg cggaagaaac cgatggtttc   120
tatctgccga tacaggtcgg caggctctct tcgatgtgga tcactctcac atacgagtcg   180
tccggcagtt cgtcggatgt actccttcca cggattgcac ttcgccctct tccgtcggga   240
tgggacgcca tgcgggtcga aaagcggatt gcccaggcgg actgctatcc gctctgctct   300
tcatcggaca gatagtgctc ctccttgcag gcttgtgtat gccttcgctg ggttcatagc   360
cggagtgttc ggacagatac ttttccaaaa gctgtggcgg cgaatcacct tgagcgcata   420
tttccgtccg ctttcggtca gtgcgagtcc ggaggcaggc agtagccttg tttgtgcagc   480
agatcgagta atactgttgg ttgcttatct tcagcccggt cagggctgcc agtcggtctc   540
attgacgggc agaccgtctt cttccaaaga atagatagct ttgagcgttc ttcggacaga   600
cggcgtacat cgaagcgaaa cagaagattc gagaataatt catgcttcta taacttctat   660
tattaccgaa agtggtcggt ctgttgcctg tggcacaacg ttttcagtat gacaaaagtg   720
cttattttat cgaagatccg caaactgcag gctctctggg ctatttacct gcattgagta   780
tccgagcgga gtgcttctac aagacggttc catttcttcc tgactattcg gcatgacgac   840
tgaaatcgtc caaaaagttt cacac                                         865
```

(2) INFORMATION FOR SEQ ID NO:895

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2749 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...2749

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:895

```
gctccgagga aagccaacag ccctcctccc ataccgcctg cagctccagt cccgggatat     60
ggactatatc ctgccccgta tgccggtgta taacggcacc aaatgctgca tcgaatcatc    120
caatcgggcc accatctcct catccgcccc ttctgaggag caaaggcaaa agcggcacct    180
tcggggccgc aaaaagattg cgcacatcgc aggccaccgt aaaaagcgaa tcggccaaag    240
ccggagtgcc gaagagtcat cgatgcgata gacctccgac agcaaaccgc cgcaagggcc    300
atgccctccc ctatatctct cccatcccga tcgtagaagc gaagcccaat gcctgtagca    360
tccccagtcc ggcatcgttg gtggcgctgc cacgatcccg acgataaaqt tacgacaacc    420
tcgatccaga gcatctttga tagctctccc gttccgaacg tggtagtctg catagaattg    480
cgccggtctt cggcacgaga ggcagtccgc tgatgctcgc catttcgatg aaagccgtcg    540
tccgtcagcg gatataccat aagaagcctc gcgcatttcc attagtggga gtgtgcacga    600
acggctatgc gctgcccatc tgtggcagct atcagtaatc ctgcatcccc tctcccccat    660
cagctacggg cagtaccatt acttctcaat cggacaggct gcccgtacgc cctcagcagc    720
tgcttctcct gcctcacaga ggagagacaa cccttgaagg agtctatggc tatcacgatc    780
ttctcattcc gcatttagtt tacaacaaaa tccggaagca ctgcaaagca tccaacaaaa    840
attccaaaac ccaagagaaa aaacgataga caaactaact cgatggctct taggtttttg    900
ctctcattct gtaaacctgt atccggaaaa gcaaattccg gtatcaggtg gagattgcta    960
tcggaaagga ctctttaagt catcaatttt ttattgtgct gttcgcaaaa aaacagcgac   1020
actcagaata ctttcgtata tccatcgaaa ggaagtcttc ggctctgaca cctccatccc   1080
```

```
gagaataaaa gccgattggg gcttgaagga atgggaaaat ttgtccaccc gtctgtcctt     1140
ttctctgcat tgcttttcac ctcaatggca acaacaaacc tttcttgcgc aggacgaaat     1200
cgacttcatc gtctcgttcg cgccataaaa tacctcgaaa cgatgaacaa aagcctgact     1260
gacgaggtag gctcaatgcc tgattcgaag attcgccccc aggacttgcg atcaagcatc     1320
gctgttcaaa ggtaaaaggg ctatacacca tcttcaatgc attgttatag actgcagttt     1380
gggaatactt gccttcctcc ttgccatatc ataaccaaac tctgaagtcc acaaagcaat     1440
ccgctttcat ccaacagatt gatatatccg ccaaggtcac cgtattaccg gcatcttgga     1500
gtgagcctaa catcttgtta aagaaagtaa ttctcccgaa taggcagccc ccaattcgaa     1560
agtccggcaa gcaaagccgg tttacctatc ggtgtaccca tcagaatgtc cttattgtag     1620
ttgcttcgat aatggcagct tgaatatatt ggctgaaacg gtcgtctcat cggtcaggga     1680
agcggcaccg ggatatcccc cataaaacag atattgttga gcgagaaacc gaagcagtct     1740
ttcatctcct gatagctcca atggtcatgc gtatttcttc gaatcgaccg gccagcgact     1800
ctgacaaccc ctttccaaca acacacgact actgcccaac agcaacacct tgatattacg     1860
gtatggaacg tatcatcgtc ccactctttt ttcacgactt cactccaatt acaatctttt     1920
gtatctcgtc gatcacaaga ataatgctct cccactcctt gcctccttca ggctacggac     1980
agcagcccaa caatcggaaa tccaagcacg ttcacagtcg gaacattatc ggctgagaag     2040
aactgatagg gtgcatccag tccttcagca cctgcttgac aaccgttgat tttccgattt     2100
gacgagcccc attacgactt gaatgaatct cctccgatct ttaagacgat ctgtaacaca     2160
tgatactctg ctcttttata catatccgca cattttactc agtaggtgag tattttact     2220
cagtgcaaat ataataaaga catttgattc ataacaatct cttacaagtc aataaaggca     2280
atgtgattat cccataaagg gtggattatc atgtattttc caatagtaaa tgcaacaccc     2340
tataaacaaa aatacccccga gggataatcg ctcggggtgt gaagccaaca gcccacctcc     2400
ctaccgcctg cttctcctgc ctcggcagag gagagacaac ccttgaagga tctatggcta     2460
tcacgatctt cttcattcca cttccggctt atttgcagcg atagtcggca gtccgcaagg     2520
atgcaagcat gagaggaaaa gccaaatcac aaaagagcca gtatgatccc ataaggcatc     2580
caaagactct tggagaaagg caacgccaat agttcatctt gatcttacga acatccatat     2640
cgtagattcc ttgtgcggac ggtcttcctc catttttgct acgcttcgtt tgtatgctcg     2700
cgatacttcc tttccagttg caagtagaaa gcatccacca aggccatgc               2749
```

(2) INFORMATION FOR SEQ ID NO:896

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1167 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1167

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:896

```
gagacaaaat aatcaccgca ggcggtatac acggcaccat acgcgaggtc gcgaaaaaga      60
tttcttnntc gaaatcgcca atggcgtgaa catccgcacg ataaagggtc tgtatatgta     120
tctgctcgcg aagcggaaac agacatgcca acaagaaaga ctaagctgca taaaagcaat     180
ctatcggagg aactgaagag acgggtaggt attacgtcca ataacacttg gcataaggca     240
cccccatctt tcagttcctc atcgttctcc accaaatccg ctaaagggaa tgaactcaat     300
ctcctcaatg ccgatcggaa aaagggggaaa agtatagaca aggatccgct ccccgttcac     360
gccgtgggag gaacgtcctt gtcttttttcg ctttgtggtt ctctctgccg ttttttggtt     420
tatgcagagt ctgcaggatg ttacaccact tcattttcga ttcccatctc ctattccgag     480
ctgccgccgg cataggagtc tcaggcaggc tgcccgaccg cttggacatt atgctgaaaa     540
```

```
tcagggtatc gtgcttctga cctataagct gaaggggttc tctccgataa tatctcccca      600
tccaaagcgc aattgcacaa gaaaaagagc atgcgacgaa caaatgggat ctggtcgaac      660
tgctccaaaa acaactggag acctcccgac cgttgcagcc atctcgcccg aagacatcaa      720
agcgacattc tacaccgcaa aaagaaaacc gtacccgtag tcataaacgg acaaaccgtc      780
cccaagaagg attctacgcc ttcgatccca tcttctcgcc gagcgaagtg acctatatgg      840
aagtgcagaa gcgttggcga gtatcgggtc cgtgaatacg gagagttttc tatcgacgga      900
ttggagagcg atttctccgg tgacatagcg atgccccgat cgatgatatc gttatcgatc      960
cgacaaatat cagaatgcaa tgcgtgtaga gcaactaacg gaacaaacgt tcgaactgcc     1020
gatcataaca agaatgtgcc tgaaggcttc ctccttcgtc ctctacccgg caaagtgtga     1080
tacagctcac actncccaca tcgcactaca aagaagtatc ggaagctatt tgcaaacagc     1140
cgttttctat ccgtcctctc cggattc                                        1167
```

(2) INFORMATION FOR SEQ ID NO:897

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 522 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...522

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:897

```
gggcaaacac cattagcaga actaatgaga ttgtccggct tggtcgttgc ttcactacgt       60
aggtctcctt gtcgaagttt acgtatctga acttgaacca ctcaaactac cattgacaat      120
tatcggcaca atctgaaatt tctcactagc gagatattca gctccacctt ggcaatggca      180
cgcacaaggg gcacatgtcc aaaagacgat tggccaagaa gtcgtgtgtc ttgtttccgg      240
acatcggaaa ggagaggcta tatcggtcga ccacggcatt gcagtcgtcc tcttacagtc      300
tgcaaatcgc tttcgttagc gacagcatca agagccgttt taacgcatta tcaacattgg      360
ctacgacata tactttgcgc tctccggcct cgattgtgtc atatccaact tcaccttcat      420
atcgtcagga agccaggtcc cccggtgaaa gtgttaccgg taatataagt atttcgccgg      480
attcgcccct actgatcgaa caacaaggag ggtaaagatt gg                         522
```

(2) INFORMATION FOR SEQ ID NO:898

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 619 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:

(A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...619

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:898

```
ggcgaaggcc cggaagtctt gacgaagctt ggcaatgacc cttcggccaa cctttgaatt    60
gctgaccatt catttcaaag tcgaacgatc cgtccgnact atgtgttctg cgggaatatc   120
gctttcatag gcttcgtgta ctacatcatt ttgcccgtga atgtaccgga gagattgatg   180
gcgaagtgct cggtagacgt accgtagcaa cgaaatagcc gtacagattc ggagtgcgta   240
catagctttc acagagatct cggcttgtcc cgttgttttg tccgcttcca cagcgtatag   300
atgcttccgt agcggcttct ctgccatgta ccgccagct ggagtcgaac gatttgttgt    360
aggcgattct tccctccaga ttcacaccat atccttcgat actccatcct tgtcgttgta   420
gatggtacga atgatccatt cttgccatcg ctcgtggttt cgaccttatc ggatggtttg   480
aactgattgc gataaaggtg gagaaggctt ctcccatgat attgaattgc caattcgtcg   540
ctcttgtggg taataatcga aagaagcact gatgccttcg tggaacgtct tctttcagat   600
tggggggaaa ggacacgct                                                 619
```


(2) INFORMATION FOR SEQ ID NO:899

    (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 2762 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...2762

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:899

```
ggtagtactc tgcctttcca aggacctgcc ttttgcacag gctcgcttcg tggtgccgaa    60
ggtctggaca aggttatcca ccgtttcagc tttccgctcg actgctttga gaagggttat   120
ggtctgctga tgaccgatgg ccctttgaag gtctcttggc tcgtgccgtc gttgtagtgg   180
acgaaaacgg taagatattt acgaagagct tgttcccgag atcactcaag agccgaatta   240
tgaagtgcta tcgctgcact gaagtaattc cgttcaaata ccaaatattt tcgggctgtg   300
ttcaatctca ttggcacagc cccgattcca ttttcagtat ctacaaacaa acgtttcgat   360
gcccttctct cttatcataa aagaaaaagg ttgaggaatg gctgtaaatt gtgaagagag   420
aggtcggaag gagcatgaaa taatgggtcg gaaagccttt agtatttggt cttatccgtt   480
ttttctgtcc aagacgaaaa gaatggagtg cttcatcctg cagtatcggg atgatcggat   540
agagcggtta tccataggac gagccagctc ttgatagata aaatcgtctc gaatcctata   600
tcggcagcat cctgccgatt gttgccatag aaaatccatc tatgcgtgcc caatagatgg   660
ctccgaggca catcggacac ggctcgatga agtataaatg gtacatcccg aaagatcgaa   720
agtgccgagc cgcttcaagc catacgaata caattcactt ctgcatgcgc tgtggggtca   780
ttgtgagggt cacacgattg ctcgtcgctg caatgatctc tccatctttt acttcacagc   840
accaaaaggc cccctccat tggcaacgct ttcgtcggcc aacggatcgc ttcgcgcatc    900
atctccttat cctgttccgt atgattcatt gattgtgcat gttcaattgt ttgcttccga   960
caggttgtcg gcttatgctt gggagtagat acagtttcat tcagagtgat tgccgtagga  1020
gtgatcctgt caaacggcga cgatagagca ttccgacagc cAttttgaac gttttcttct  1080
```

```
cataccggta tgttgcataa tttcctcggg cgaactctta tccccgaggg aagccgaccg    1140
cctcttcttt ggagcatgtg tagcagtcgt tcgctccgga gtcaatacgg tcatagccta    1200
tcggtttgag cgagaggtcg attttccatc gtcacggagg cgaatcacga aagctttcac    1260
ttgtgccccg atagcaaagg catcggtagc gtatcggaat agatcatccc ccaatgggta    1320
tgaccacgat catgcgataa cccggatcga ttcgttcgta aaccagtgcc gaaccttgtc    1380
cccaggggag taggatgggg gaatgttgcc caaatgtttg gcaatttcgc cgagccaacg    1440
atcttaccgc tcacatgatc gatataagca agacgaaata gcgtccgcct tctcgaatga    1500
gctgcgtctg ttctcgaaag gaacgaagag atccttgtgt atgccccatt ccatatacgc    1560
cccactattg tgacggagac ggcatgcagc agagccacct gtcccacttc gacaagcgcc    1620
gcatggtggt ggcgatgagt ctgccttcat tgtcatgata gacgaaacct ccacttccat    1680
accaggtgca gcatctgagg ggaggtagcg attggcaaca aaatatccgt atcgcctcca    1740
tcgagatatg ccccaatgga tacgtacggt cgatggtcag acgacctatg cgtccgagct    1800
ggtatttgct ccgttcatcc tccgggatta ctcaagcgta actgacgatt cgtcgcgcag    1860
gagggttgca ccaaaataga ttcgggcata ccatcgcgct gcacctgaaa gcgcacgaag    1920
taatctgctg gtcgtttacg tacgaacgga agaagaaaag taggcaaaag ccggcttgta    1980
tttgggctga gccatcatgc gtgcaatctc tcgtagttct tgggtgacca ataacgacac    2040
ccggccaaac cattggcacg gtgaaggtgt cttcctcagt acggtacttc atgctctttt    2100
tgatgaatct ttgtaagcag aggagtactc ttcggatccg gacaaagcag gaatacgttg    2160
atactgatga tacggtctcc ggctttcagc cctgcctttg ctgccgagag tcggggtcga    2220
ctgctgccac gagcgaaagg tcgttggcct gatatacagc cccgtataga agtaacgctg    2280
actccgcaga cggaacgtcg ggtctcacga tagcgaataa acgggaactc catcatcatc    2340
aaaggcacgt tgatcgcgca tattctgcca actccaaagg tgtggaaagg aaatcattcg    2400
atcgcattgc cagaaaattt ggagattgtt cctggcattg atcagccgta gccgagctgg    2460
attacataag gagcattgat ctcctgtgtg ccggccggct aatggggatc gatatcatcc    2520
tcttgtcacg cggagaatac tgccaagatt atgaggggcg gaactattga atgaggtaaa    2580
gagcttgttg ttgtcgacag ataataacaa tcgacgatta catcgggatt gttcagcgtc    2640
tccttcttcc catggcactc agatatttgc ccacttcttt gtagacagct atatcatctc    2700
ctcgttgtcg ggcgaagaag ctgcgaaaga gtatgtacgc agatggtaaa gtccgctttg    2760
gt                                                                   2762
```

(2) INFORMATION FOR SEQ ID NO:900

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 573 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...573

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:900

```
nagttgctgt gcgcaataat gagggtagga tggtgctcat caatggcaag agatttgttc      60
gctgcttatc tattattcca tcatgcgtcg caaggaatgg gcgatttgca tcctgatgat     120
tatatcgtca agacgattgt gactacgaat tgatccgcga tatagcgaag aaagagcatg     180
tgagcatgtt cgattgtaca ccggtttcaa atggatagca gccgtaataa gagagaatga     240
aggtctcgcc gctatatagg aggtggagag gagagttatg gattttgtg gggagacttt      300
attcgagaca agagttcggt atctgcttgt gcactcttct gtgaatggca gcttgggctt     360
tggatcgagg catgagtgtc tatcgactca tcgcagcatc tatttggaat acggtcttta     420
ctacgaaaag ggacttagtg tntgcgtaaa ggcaaatccg gagcagaaga gatagaagcc     480
```

```
atgatgagaa ttatcgtgag tatgcacctg tagaactcgg agctcgcctg tgcangaaaa    540
tggactatgc ttctctcgaa ggaaaagatt cac                                573
```

(2) INFORMATION FOR SEQ ID NO:901

    (i) SEQUENCE CHARACTERISTICS:
      (A) LENGTH: 2571 base pairs
      (B) TYPE: nucleic acid
      (C) STRANDEDNESS: double
      (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
      (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
      (A) NAME/KEY: misc_feature
      (B) LOCATION 1...2571

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:901

```
tccccgagga gatcccggtg gacgaagtga ttgtaagtat cggtgtatcc ccaatccgct    60
cgttccccga actatttccg gtcttgaagt gacaagcaag gaaccatcgt cgtcaatgag   120
agcaatcaga cagctctccc cgatgttttg ccggtggtga catcgttcgt ggcggagcca   180
ctgtgatatt ggcgatggcg atggacggaa agcagcagct gccatgcacg aatatctgaa   240
agcggatcat agccatgact ccgagatgaa agggagaaga tagctatgcg ctatccgaag   300
tcctcattcc cttggctctt gagggtagtt ttcactaccg attgccgagg ggttagccga   360
gaaggctatc gtggggatgc gttgcgtagt actttcggag ccaagcgata ctatacgggg   420
attatcatcg gactgtccga caacgtccca atctgcaaat ttcattcaag gaggttctct   480
tcctgcctga gataagccgt cagttactgc ctcacagctg agtctgtggc agtggctgtg   540
gcttattaca tatgtacgca gggagaagta ctccgtgctg ctctgcctca gcattactac   600
ccgagagcca taccgtcatc cattataata cggacttgaa gccgacagcc ggcttagtcg   660
tgatgaagag gagctcctcg atatttggag tcggcaaaag gacgaaccta cacgcttgac   720
gccctgcaaa aggcttcggc aaacgagcga ttcgcgcttt tacctccttg gtcgaacgag   780
gggcatacgg ctggaggaag aagtaaaaag ccgttataag cccaagtcag aagattcgtt   840
cgtctggcag agcctttccg gacggaaaag acttttgcct cgttctggat agtttgcatc   900
gtgctcccaa gcaatccgcc cttttgcttc atgggcagag ctgataacag agcactccct   960
cccatattcc tctccgatgc gcaaaggcta ctggcggagt ccgatcctca tgctacagtc  1020
acccttttccc tttgaaaaag aaagggattt ttctatccga atctgttaca cactcggtat  1080
gtattcggcc ggcggaggtg agtaccgctt gtgggagcag ccccaaggga agaaaaagcc  1140
attcaatcgg aagagagttc tacagactcc gcagtacggc ttctctacct caaaaacctc  1200
tttctctcct ctatacgcat gacttcgacg caaagaaaaa caactcttag aatggacgga  1260
agaagttgtc cgttaggagg ccaagtcctg tacctctctc cggaagcgaa caaacgagga  1320
ggagcgatac tctgtccaca cgtatggccg agaggctggg cagttgtttg cttcctatca  1380
tgcctttgaa agcgatgcca aaagggtgga agtgtggaac aattggccac aacggaatat  1440
ccttgcgtgg tgctgggtgt tcgatcggca ttttcctgcc attccgtcgc ttgcgattga  1500
ttatcgtgga cgaggaacag aatacctcta caaacagcag gatcctgccc ccgattcca   1560
tacgcgacgg tggcagctcg actcggccgg atccacgact gccctgttgt gttggctcgg  1620
ccactccttc tgccgaggtg ctccaccaag tgcgccacaa agcctggaac tgatcacctg  1680
gccggacgat cgggttcgcc cccgattcga tttggagtca tagacatggg caagatgcgc  1740
cgtcaaagac aggtcggtgc aggtaactgc tttctttccc cctcgtctca gctattgaag  1800
agacgattcg gcaaaaaaaa tggccgtcgt cctccaaaat cgaaggggct tcgctccgta  1860
tacatttgta gctcttgtgg ggaaaagctc cgttgcatcc actgcgatgt ggtctcacct  1920
atcacaagca ttcctgtatg ctcgtctgcc actactgcgg tacagcagac cccttccgcg  1980
catctgtccc tcctgcaagc gggcatcggc gtaggagagc cgagcagcct gcaacctgtg  2040
gggtatggag ccgaaagata gaggaagagc ttaaaagacg tttccccacc gtctctatcc  2100
```

```
tcagaatgac agcgatatgg ccatgagccg aacgaagatg gacgaagctc tggcgctctg    2160
gaagcgaaag aggtggatat acttgttggc acgcaactga tcaagggcaa gtctataacg    2220
aacatgtagg tcttgtagcc gtcacccagc tggaagcata ttgggtttcc cggatttccg    2280
cgcctacgaa cgagcttatc agcactctat cagctcatgc ttaggagcgg agcctcccgt    2340
ctatacatac aacgaacaat ccggccaact cctttccgga tttattgcga gaaggtgatt    2400
aaaggctttt atcggaaaac aattggagga aaggcaaatg cttttcttcc accttttagc    2460
cggctgatac gaatcgagtt cagagcaggc gaagagagct cgtggagcga atcgcttccg    2520
actatgccgc ctctttggcc gcccatctcc ggagcagagt ctctcccccg t            2571
```

(2) INFORMATION FOR SEQ ID NO:902

    (i) SEQUENCE CHARACTERISTICS:
      (A) LENGTH: 584 base pairs
      (B) TYPE: nucleic acid
      (C) STRANDEDNESS: double
      (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
      (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
      (A) NAME/KEY: misc_feature
      (B) LOCATION 1...584

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:902

```
gggaaggcat tttctctgtg ttcgatgcgt ttgcaggaac catcagcacc aaaactacag      60
atataacatc gaagcgtacc ggcagatcga tggcgtacta cgcacatagt gatgcgcaga     120
ttcggaaatc agtcgccgct tgcgtgctcc acagcctctt cggggggccag tagaaagcct     180
tcggtacgag tcttgattcc acaacgacca gttctctgga cgtggatgcc acgatatcca     240
gctcgagccg ccccgactgc cagttcaggg cttctatctg atagccttgc tgccgaggtg     300
tttcagcgcg atctcttcgc cttggcgtcc gcggtcgtta tgacggccat tgctactgtc     360
gagacctttt ttttcgttcc ggctgaggat gagctctcta tgtgccgttg ttttttctct     420
tccaggatct tacccacagc atgaatatgc cggtttcctc cacctctccg aaagactcat     480
tcactgcagt ccgaaaacac gcatctccgg agacaaagct atatatgcac ttacgagana     540
gggatattga tacccagctt gcgcacttct atattgagag tctt                      584
```

(2) INFORMATION FOR SEQ ID NO:903

    (i) SEQUENCE CHARACTERISTICS:
      (A) LENGTH: 1075 base pairs
      (B) TYPE: nucleic acid
      (C) STRANDEDNESS: double
      (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
      (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
      (A) NAME/KEY: misc_feature
      (B) LOCATION 1...1075

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:903

```
cgacgtagct tgtgtgaatg gcgatttcct gtacaacgta ccatgtttcc agaagccctg      60
atgcgtgcac aaaaagatgg taaaccgaca ggtactgtgc tatcatagcg tctacgatca     120
accagtcttg ggcttctcct atgcgcggca ggatgagatg aacgaaattc tgtgcgaaaa     180
acacccgaac aacatcagcg tactttcgga ggtgtcacca tgaacggtat gtttgctatg     240
gtggaaagta taaaaaggat ggtgagaaga tgctcgacac atggactgta ttcgcgaccc     300
ctcgctgctc gttcgtacac ttgtcccgac caaaatgcag gttcggctcc ggcaaatatc     360
tctgcctctg cacagacatt cgaagtagct tggactataa cggtgctatt gctacgctct     420
ctgacgatgg tgatatggtc gcactgctat cgtgaaagac ggtaaggcta tcatcaaatt     480
aaatgagagt tcgctgatga aacgaacttg acgctcaccg tagtaggata caataaggta     540
ctgtgataaa ggatgtgaaa gtggaaggta catctattgc cgacgtagca atgataagcc     600
ttatactgta gctgtatcag gtaagacgat aactgtaaaa gtcctgctgc cgggctgacg     660
atcttcgata tgaacggccg tcgtgtgcta ctgctaaaaa ccgcatggta ttcgaagcac     720
aaaacggcgt gtatgcgttc gcatcgctac tgaaggcaag acgtatacag aaaaggttat     780
agtgagtaat tcacactgca attctctaat aagggctgtg ccgaggaatc catcggcaca     840
gccctttttg aattattggc actacgccaa gagactgttg agaatcaggc gagaaaagag     900
gatgctaaag gtcgtaaata acggctcaaa ccaatggccc gttcatctca taccatggtg     960
cgcaagggct acagaccata acttgagatt atgtgccata gtgcttcgtt ttaggtggag    1020
atatggtctt tattgaggaa aaatattctg gttatgagag agaaatcttt ttttg         1075
```

(2) INFORMATION FOR SEQ ID NO:904

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 723 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...723

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:904

```
cccaatccgt cgctccgtta agaatagagt tgatctgccc catcggtaga acctgtactt      60
ccgtgtcgaa atcgaatttc ttgataaaga tgttattgct ctgacgaacg ctaccatccg     120
gccatcgggg ctgaatgtag ggatcatact ttgccgacat gctcgctcag tggtttacc     180
aaattgcggc gaacatatag tcgtagacgg cagcacgata cgaatgccga tagatgctct     240
ccataccgta aagagcaaaa tatgatgtcc ggtactgctt acctcgtagt tctgatttgt     300
ttaaacgggc attcgcgtgc tcgttcgaca ctgaagagcg tattaccgcc ttgccggagg     360
cataattgta gcgaatgata gccgttcgct caggttcatc tccgtatagt gttctccatc     420
cggcatggag cgtattccac tcctgcactg cgagcataaa acattccgct cgtgatttct     480
ttcaaatcta gggtttgttc cccgtctgag ccatggcaca catggttacg atgccaagtg     540
cagaattatt accggtcttt tcataagaaa gtgtattgta tcttctttaa gtggtttatt     600
gcttagcgtt tcaatgcacg atccatctct cggcgatatc tcgctctttg atggatgcac     660
gtttgtcata attgnttttt ccctcggcca atccgatttg cagcttggcc aatccctttc     720
atg                                                                   723
```

(2) INFORMATION FOR SEQ ID NO:905

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1306 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1306

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:905

```
gattttcaac ggtttgctct tcggcgacag cctgatggat tcctcttcgc ggagaatgcc     60
atggaaggct atgcacagat gctgggagaa gactatcgtc taacaatgcc gaagccaatc    120
tgcaagggct tccttctgac ctttttggcta tatctacaag caggaaaata ccatcgctta   180
ttgcgatacg ggattgtctc cacgcgcatc aatacatata cttacgaagg cggtgcacat    240
acggaaatac agtccggttt gccaacatcc ttcgcaccac cggcaaggtg ctcgagagcg    300
agatatattc aagatcgact atgcggaaag gctgtccgca ctctcatagg acaattggtg    360
cacgatttcg gcaagaccac acctgccgaa ttgatgcaat aggtttcttc aacgcagaag    420
aaatacagcc caatggcaat ttatgatcga tgacaaaggt ctcacatact gtttcaatga    480
gtatcagata ctgcttatgc cagaggtgct gtctatgtcc gtctcggata tgacgtattg    540
ctcctttgct aagggatgat tccccactaa agcgttactt gccgtagccc ctccttttgc    600
ttcgaccgat atgaccaata tgcaggagat acccgaaagc cgctgtccca accggcaggt    660
accgagatca tcgagaaata cttccccact tgtccgaacg gcaacgcgaa caattcgagc    720
aaatgggagg gctgtcacgc attggaatgc cctcatcaat gtcatttccc gaaaggatat    780
agacatttgt atctgcacca tgtgttgcat tctttgggga tagctcgcat gctaacttca    840
aacccggcac aagtgtattg gatttgggta cgggtggagg ttccccggta ttccactggc    900
gattttgttc cctcaagtct ctttcctgct gtggacagca tcggcaaaaa ggtgaaagtg    960
gcttcggccg tagctgaagc ttggggcttg acaatgtgcg cactatgcac tgtcgggcag   1020
aaagcatagt gagaaattcg acttcatagt cagccgtgca gtaatgaagc tgagcgaatg   1080
gccaagatct gcaggaaact catccggcgt gaagatcagc naaatgcctc ccgaacgggc   1140
ttatctgtct caagggtggc gagcttcaag cacgagtact gccattccgg aacaaggcna   1200
tgacagagga gctatggccg accttaagaa gagtatttca aacataaaag tgtctactac   1260
ctctatgaca cgacgaagta aagatgtcac ctcaattcgt gcagaa               1306
```

(2) INFORMATION FOR SEQ ID NO:906

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 603 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

```
     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...603

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:906

ggaacttcgt ctcctgatcg atagcggacg ttatgacagg gctttgccct agcccaacag      60
ttggtggcca aaaatccaaa gcatgccgat aataactaat gctagggctt nttctgtaca     120
nggctgaacg ctacgaagaa gctattgtcc ccttcgggtg gccgtaagcc ggcggagtga     180
tgcctatgag atgttgcgga tgcttatgcc aaagagtatt tcttctccga agctcttgct     240
gcactgaaaa acagaaggtt actcttgtga agaaaaaaca ggaaacagtc tccaagatgc     300
cggaatagac cgtatgcgac gagctgtgcg cttactggac agaccgaatg ggtggaggtg     360
atagacagcg tacggacgaa taaagccgat ctctgtcggc ctacaatctc atagccgata     420
acggtcggct cgaatgggtg aaggaaacca aggggaggcg acttcttttg tcaatgggcg     480
cggcgaccat ccatcatgac ggagaaaggt gaggatggag tttncagcct gcatgaagnn     540
nncggatcgg tggcaaatgg ggcaatgcga tccccctcga aaaactcatt cccgattcaa     600
tga                                                                  603
```

(2) INFORMATION FOR SEQ ID NO:907

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 595 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...595

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:907

```
acagagggag ttcggaaccc tctccttcgt tctccatttg catcttggca tgagagcata      60
taagagagtt tgagctatgg ccgtcggatg ttttttgctt ttcctgctat cgggtgttgg     120
aacataagat cccatgagcc aagctcttgg tggtatctcc acttttgtag tccactatgc     180
gccgacattc ctcattaact catcaatgcg gtctatgatt ccgtgtaacc gaacccggct     240
accatgctaa gggagaagct gcctttgact ctgcgctccg agtctatgta gcgaagggag     300
ccaatgattt gtnatgctcc aagatccgcc gtacatactt ctcatcatga tgcaataaag     360
atgattcaat cccgacaaag ctccctgtgt atggccgatc ggagatattc ttccgtgtat     420
gcttgcctta ctatcctcgc gtagttgcat tcttcggatc caaccaccga gataaaatat     480
ccgaagaaac atcccaccac cgcaacaagg cttgtagatc aacttcatgg aacgatgcac     540
acggaccgaa atcattggcg gccatcagtt catcggaagc attctctccg tatcc          595
```

(2) INFORMATION FOR SEQ ID NO:908

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1072 base pairs

(B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1072

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:908

```
ttgcaaaagg agctattcaa aaaaacacga accggaaatg ctccgattgg gcgcgtattc      60
cctgaaaaag tggcgcgaga attttttcgt tgtggcgtag aattttttgc ttcccacgcc     120
aaaataaaaa agtttacgaa ccgcgtttga ggagtagcaa acgggaaaat tttggagcct     180
aaaccaattc ggttatatag tacatgttcc tgatcttctt ttctgaaaag gcttgatagg     240
attgaggaac tgtttctttt ttcttttgct ttgattcggc tgttagtgaa caataaaaga     300
gaaaaagaag aagcctcttg ccgagacaac cgagcggttc ttgcagaggc ttccttatgt     360
attggtgcaa agtgcaccca tggagttctt aaaccgagat tctacaatat cccagtcaac     420
gatactccaa agatctttga gtggtcggca cgacgattct ggtaagtcag ataatatgcg     480
tgctcccata gtcgaatccg agcaaaggat tcaacccttt gcgcacggga ttgccggcat     540
gggttccttc tcgatggaca gtttgccatt ggcatcggat gcaagccaac ccagcccgaa     600
ccaaagaggg tggtaccggc tgtgttgaac tcctcttgaa cttttcgaat gagccgaatt     660
gtttgtcgat agcttccccc agtttgcttt cggtgctcct cccttgcccg gacggaactg     720
agtgaaatag agatttggtt gagggtttgg ccggcattgt tgaagatacc gccttcgctc     780
tttttacgat ggtattcaag tcagcgtttt caaattccgt gccgatgatg agctattgag     840
gttgtccaca taggtcttca ggtgcttacc gtggtggaat tcactgtttc tttgctgata     900
acaggagcca gtgcatcgac cgcataaggc aggaaatgag ttcgtgagtc ataacgtctg    1020
attttattgt aattaagtct ttaataattt gtatcggagc agtgtaaaac cgacaccgac    .1020
aatttttaac attataagaa catgatgaac ggaaaaaggt cgaatcttgg tc            1072
```

(2) INFORMATION FOR SEQ ID NO:909

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 1010 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1010

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:909

```
ggctcaagag attctggcca agatggataa cagcctgccg cgtctggcca atgcgacatg      60
acaagagctg accggtagct tccgaggtat gggaccggaa aagcagtcac cgtgatggca     120
gcaatggaac tgtcccgccg tatccctcgc aagagatgcc ccgcagagaa tccattaccg     180
atagtcgaat ggcctacgaa ctataagccc atttctcaca gacctgccgc aggaagaaat     240
gtggggttac tcctcaacca aagcggaaag ataatcagca tggagaacct tagcgaggag     300
gtgtatcgga gacttcggcc gatgtccgtc tgatcatgca caagccgtct ctcatcttgc     360
ctcggcaatc attctggcac acaatcatcc ttaggaacgg tacgcccaag tgaacaggat     420
attcagctta ctcaaagggt gaaaaggctg ccacattgct cggatttcga ctgaacgacc     480
atctgatcat ggtgacgatg gggcatattt cagtttcgct gacgaaggcc ttctctgatt     540
ttctctgaat ccatacaagt aaatagagag tcggactctt tcttcttgtt gaaaccgatg     600
agaaatcaac caccggaaca aaaaagccgg gtcatccttt atatcgccgc atagcaagag     660
tacccggtgt cgcataggcg acatttaggc agatagcagc ttctactttt gtgtcatcaa     720
agaacaatga tcgataacat aagaaggaga ctcgacaatg gaaaagaaaa tgttttgcta     780
tcaagccagg aaacagccgg caataaggga tgtatcctca aagggtatgc cgtaggactt     840
tagtacagct aatctgatgg attgctcgtc tttaacctca aagtattgcc atcataatga     900
cttctatgag gcgtgccgga gtgaaagccg aaccgaaagg ctgcaaggcg atcatggaat     960
ctctattgcc acaataccaa gccaactcga ctactctcca tagccaacgt                1010


(2) INFORMATION FOR SEQ ID NO:910

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1274 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...1274

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:910

gaatcgacta ctctctattg attaaggaag ggctttttgt acttttggcg acagaaacga      60
taaataactt cgaaacgatg accaactcca actccttaac gagagactac agacagcgga     120
ctcattcttc ctgatggccg gcccctggcc atagagagcg aagatatggc actgcgcatt     180
gcagagcgaa tagtagggtg acttcccgac tgggcattcc gtatatattc aagggatcgt     240
accgcaggcc aaccgctcgc gtatagattc cttcaccggc ataggcgacg aaaagcactt     300
cgcattctgg gcaaggtagg ccgggagttc ggtgtcccga cgggacggac atacatgaga     360
cacacgaagc ggctatggct gccgagtacg tgatgtactc cagataccgg ctttcctctg     420
ccggcagacg gatctgatcg tgcggcaagc ctacaccggg cgaatcgtca atgtgaagaa     480
agggcagttc tctcggcgaa gccatggctt tcgtggcacg aaagtgcgtg gacagcggca     540
cagccaagtg attctgaccg agcgtggcaa taccttcggc tacacggatt ggtggtggac     600
taccggaata ttccggcaat gcgttcgctg ggctttccgt agtaatggac gtgactcact     660
ccctccagca acccaatcag ggtagtgcgt gacgggggga aaacccgaac tgatagagac     720
catcgcgaag gctgcatagc cgtaggtgcg gacgggcttt tcatcgaaac gcatcccgat     780
cctgttcggc caaaagcgat ggagccaaca tgctccgact ggatttgctc gaaggctgct     840
cacgaagctg atgcgcatac gggcagcgat cagggattga gctgcaagta accgtcttat     900
cggccgatta cacatattgt aggaaggtcc ttcaggaacc gaaagaaata tgatcgagga     960
ggaaacgagg ctgattcgct ctcttagaaa tcccgacatt atgtccccaa ccggcgaact    1020
cctccttcct aacaagagtc gcagcatccc tctcttggct gtacataaat aacttgtact    1080
ttgtgcaact ataaaaaga atcaaatact attccccttt tatggaataa aaaagactac    1140
acgtatcgaa agccgatctt atcggagaac gcgagaaccc ggccatattc tatatggcgt    1200
```

```
acagacgctg cgtggtatag aaaactcccc atcagcaatt ttcatctgaa cgattacccc       1260
ctgtttatca atgg                                                          1274
```

(2) INFORMATION FOR SEQ ID NO:911

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 557 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...557

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:911

```
tgcgctatgt aatggagcag attctctttg agttgtgagc gcagttccct atttcttcgg        60
acgggatttg ctctattatt tcccaagcgg attcttcacc tgacggctga gaaaatccgt       120
gccaagatgc cgttcataga acctctgctc tccggagaag cccaggtcgg aaggtgtacg       180
ccattggtga catgtctaca tgcagctctt cggcaaagaa gccgggccat acgggagcga       240
acatcttcgc gagactactc catgcagata gctgactcca ttggcctcct gacagtgttg       300
agtgcaaaga cactcatgga gaacttttcg ttcgagcccg gtgcgttcgt cccatgtcga       360
tgaactcctg ccagctgatg ccaagtctgc gagaaaatgt cccatgtaac gccccaaaag       420
ctcttcatcg aagtagtcat gcctgccggt acaggggtgt gaaccgtgta gagcgaggag       480
gaacgaacag ttcaanggca atatcgaaac tcaatccctt tggttcacat agtcnggccg       540
acgttgagca ttgatca                                                      557
```

(2) INFORMATION FOR SEQ ID NO:912

    (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 881 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...881

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:912

```
caaagatacg gtccatcgct tggtgcatga agaagaagat ggccttcccg ccttattata      60
gatgtatatg gacatacggc ctnatgcagg cacacagcta ggtatgccnc cacgcacgan     120
cggatatagc gaaggctctt atagcgagac tgcaggcttg gtagatgccg tttattacaa     180
gtcggacagt actctacatt caaagccgga ctggaatcgg ccgatggctt cctgatcggt     240
tcagccaagc cgaagcagag tacgaaaacg gacttctctt cctgcccgac tggacaaagg     300
acagaagacg gggttcttta tcgaccagcg agagaacagg gcctgctgga ggagtatgcc     360
tccggacgta aggtgctcaa tatgttctgc taagcggtgg tttctccctg tatgcaatga     420
gaggaggagc atacaaggta cctcggtgga tagctcggcc agagccgtgc atctgttgga     480
gaaaaatatg cactgaattt tgccggagac gatcgtcacg aatcttatgc cgccgatgct     540
tccatttcct tgacgagatg gctgtcggag cttatgatct gatcgtacgg atccaccggc     600
ttttgccaaa catcgcaaag tgctgcgcaa tgcgctgtag gttaccgcaa actgaatgcg     660
gtagctttc gcaagattgc tccggggggcg tgctcttcac cttcagctgt tcgcaagcgg     720
tcagtcggga ggaatccgtt tggcggtctt taccgcagca gcatcggccg gcagaaaggt     780
gcgatactgc atcagcttac ccaacctggc cgatcacccc atcaacatct atctccggaa     840
ggcgaatacc tggaagggct tggtctctac gtagaatact a                        881
```

(2) INFORMATION FOR SEQ ID NO:913

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 855 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...855

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:913

```
gggcaaaaac attcaataca atgacgatag aacaattcaa tttcgccgga agaaagcctt      60
cgtgcgcgtc gatttcaacg ttcccctcga tgacaactta agatcacgga cgacacccgc     120
atccgcgcag ccctccccac tctccgcaga tcatagccga cggcggtatg accatcatcg     180
gctctcatct gggacgccca aaggcgtagc accggagttc tccctccggc atatcctgcc     240
gcacgatccg aactgctcgg cgtggatgtc ctctttgccg atgactgcat cggaccgatg     300
ccatggacaa agcggccaag ctcaaagccg gccaagtgct gctctcgaaa atctccgctt     360
ctatgccgag gaggaaggta agccgcgcgg acctccgacg atgcttcgga cgaagaaaaa     420
gccgcagcga agaaagccgt caggctgctc agaaagagtt tacgcaaaag ctggcttcca     480
tggccgactg tacgtgaacg atgctttcgg cacagcgcat cgggcacatg cttccacaga     540
ctgatcgctg actacttcga ccgagaccac aaaatgttcg gctatctgtg gagaaagaag     600
taaaagccgt agaaagagtg ctgcacgaca tcaagcgccg ttcaccgcca tcatgggagg     660
ctccaaggta tcgaccaaga tagaaacatc gagaacctac tcaacaaagt ggataacctg     720
atcctgaccg gcggatgacc tatactttca ccaaagcggc aggcggtcgg ataggcctct     780
ccatgtggaa gacgacaagc tggatttggc tcgcgacatc gtgaagaaag cagcgaaggg     840
gcgtcaatct gatac                                                     855
```

(2) INFORMATION FOR SEQ ID NO:914

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 280 base pairs
        (B) TYPE: nucleic acid

(C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...280

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:914

ttgccgctat gaaaggactg gcctctgtcc ttgaggctga agtactccgg aatagcaccg   60
ataatatcga ttgccacgaa tagaatcacg aaggagccat gatctctttc aggtcgataa   120
ggctcaaatc ttgtaatact ttgtctaaaa atccatcgtt tctgatttgt ttgatagtta   180
aggttggaag gtccggtggt tgtcacgatc ttgacagtcg caaaattaac gtttttcgcc   240
ctatcaaaga taaccatcgg cgaaaaaagg tactgccggc   280

(2) INFORMATION FOR SEQ ID NO:915

     (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 623 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...623

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:915

gtactcagcc ccgtcgtaca ggaaccgaga aaatggtgca acgtacagcg gacgacctgc   60
aggcgttgca actcaaaaga gaccggctgg aagaggaacc tgtaaacggg acaagtcgag   120
agcctatttg gtggatgacg aagcgtgaat aacaagatcg aagagatggg ttttatcggc   180
ccggaagatg cgattacctg gccggcatgt atgccgaacg tacggcgttc aacgccaagc   240
gctggttata aaaaaggttt atcaactgtt ggaactgctc tttcatgccg tcagctggtc   300
atcgacacgc tccgcacatt ctttctgatc gtgctgtcca tccggggccg atcgtgttcg   360
gtatcgccgt atgggacgca ctcagcggat cgtgacagcc tggttcagcc gctacatctc   420
cgtctatctc tggctgccgg tagcagtatt ctgacagcac tgctcacgaa gatacagatc   480
ctgatgctca caaggagatt gcccagttgc aagacgtgaa ctatatgccc gattcgggaa   540
ctggtactac atcgtcttct tcctgatcgg cattctcggt ttcttcaggt accgactgtt   600
tcgggatgga tcatcgaagc ggg   623

(2) INFORMATION FOR SEQ ID NO:916

(i) SEQUENCE CHARACTERISTICS:
    (A) LENGTH: 718 base pairs
    (B) TYPE: nucleic acid
    (C) STRANDEDNESS: double
    (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
    (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
    (A) NAME/KEY: misc_feature
    (B) LOCATION 1...718

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:916

```
gtggaaggat atcagaagat tgtcaaatta tttctttgat gatcggaatg cgttctgtcc      60
gatattgcaa tcaagcaata tgaatttgca ggaccacgag cttacttcaa ttagcggatc     120
acagagcgag tgcaaaggaa gagtcaaatg catcccggat ccgattgctt tttcttatac     180
ctttcctgaa aagtggaaaa aagacctgtt caaaagctgg tagaaaagca ttggagagac     240
gaactctttt agtacgagca cccactggtg ctggaaaaac ggatgcagca ctctgtgggc     300
ttctcatcaa atcaaacaca gaaaagcaga ccgcttgatt attctatgcc cactcgtttt     360
acaacaaatg cactagctct aagcgtatct tcaccctttc ttctacaggc ctgtatcatt     420
ccagtgcatg gacacagaat tcagtagcaa aatagacaac ggggaaatag ctttagagca     480
ggcaagatac atcataacca agctcgctta ctacagaccc ctataacggt atgcaccatg     540
atcatctcct ctcttcattg actctttgtg acgaggaaca tcagaccata cttttgcact     600
ggcaaatgca tgtctcggta ttgatgaggc agatttcatg atcaatttac acaagctaat     660
atattagtat tactagaggg tctaaatatg gaaagtgccg atattgctga tgagtgcc      718
```

(2) INFORMATION FOR SEQ ID NO:917

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 541 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...541

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:917

```
aacggatcac ccggcgcagg atcggggtcg tattgagtgc cggagcagcc tctatctgct      60
gaacgnatgg atactgagcc tgccggtcgg catagacctc gggctgtctg ctacctcctt     120
acactgagcg caggatttat ctgtctgtga tggccggctc ctggatcagc cgcctgttga     180
```

```
agcacaacct gatggagatg tattcaatgt ggagaatgaa agtttcatgc aggaaacccg    240
tctgagacga acgagtattc ggtgaatctc ccgactcgtt tttattaccg gaaaagtggc    300
gcgacggttg gatcaatgtc gtgaatcctt tccgcgcgag catgtgctcg gtacgccggg    360
gtcgggaaaa tcctacgcga tcgtaaataa ctcattaagc aacanatcga gaagggattt    420
gccatgtata tttatgacta taattccccg acctttcccg agatcgctta caaccatctt    480
gcttcagaca cggaagggcg tattgaagtg cagcccgaan gttttaccgt aatcaacttc    540
g                                                                    541
```

(2) INFORMATION FOR SEQ ID NO:918

   (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 1429 base pairs
       (B) TYPE: nucleic acid
       (C) STRANDEDNESS: double
       (D) TOPOLOGY: circular

  (ii) MOLECULE TYPE: DNA (genomic)

 (iii) HYPOTHETICAL: NO

  (iv) ANTI-SENSE: UNKNOWN

  (vi) ORIGINAL SOURCE:
       (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

  (ix) FEATURE:
       (A) NAME/KEY: misc_feature
       (B) LOCATION 1...1429

  (xi) SEQUENCE DESCRIPTION: SEQ ID NO:918

```
aaatagtcac atatttcgcg gcctgtcatt ttgcantggt gcaaagaaat tctggtacgg     60
aatagatggc ggaacatgtg gtacatatag atcggaatcg ccgggcaaat ccgtattgat    120
ggagagagga gcttgcaaat gatatatcgc gccggacttc gctcagcatc acatgatgaa    180
tcagatccat gaaagggacg ggccgaacag agcgtctgca gaacttattt cggtggaaga    240
aacaccatag gctcgttcac aaaccggcga acggcagctt catcggagga gaaagcgcca    300
taaaggctga atcgggagta agccgcgata tgtccgtcaa gccccttcca ctctttttatg    360
cagtaccttg tctccttttgc gagcgagact gatcgcacat cggacacttt gtccaaatga    420
ttggccggat tcagtacgag acggagtcgg cttctgctcc tttcaccctc cggctgtact    480
cctgatgatc tgtcccagca atagtacatc tatgcctgcc acttcacgag cgagagtcaa    540
ccggcatctt cgagatagtt cgaattgtca ttctccctgc cggaatgcgt acgcatacaa    600
caaaatcagg ttttttccttt tggatcacaa acggtaccag tacttggccg attcgattat    660
atcgtcgaat cgcattcccg tccacaactt tgcggcagcc actcaggaat agctggagtt    720
ataaagccca acagaccacc ctcagcccgt tccgatcgaa gaccttataa ggagcccaat    780
atggttgccg gtctcggtgt cgatagcgtt cgccgccaag aaagggaagt cgcgccggct    840
acccatttgt catagacggc atggccggtc tcgatgtcgt gatgcccggt atggcggcgt    900
catagcgcaa gtagttcatc gcacgggaga aagatgagta cccgtcgtgt ccatgtagtt    960
ataatagtag gccgtaggat gccctgcaat acgtcgccac catcgaagag cagcaactcc   1020
gatctgtcca ccgggcagct ttcagaaagg aagccaagcg cgacattcca cccgaagtgg   1080
tcttaaagct ttgaaatcag tggggaatac attcccgtga agatccgagt gtggataata   1140
cgaagcgaat gctcctgcct gcttgcacat ccaccgggag aaacgtcgcc agcggaagca   1200
ggacggacag caaaccgaaa agtctttctt cataccgtgc aatctgtagt attcctaaaa   1260
gtctatttca cctgctacct gcagcaactt cagccgccgg cataatgacc ctgagcgaac   1320
catcgcatcc tctgccgaaa gaatcatgcc ctcggactcg atacctttca gctgcgcggc   1380
ggcaaattgg cgataaagca tacctgcttg cctaccagct ctccggagc               1429
```

(2) INFORMATION FOR SEQ ID NO:919

   (i) SEQUENCE CHARACTERISTICS:
       (A) LENGTH: 443 base pairs

(B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...443

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:919

```
gccaatcaga acaatcctta cttccgaccg aatcgagagt ttgcctttct cgccatacaa      60
cggacgaaat acttcttgtc gcagccaatt ttgccccaac gaagcagaaa tcagggtgat     120
tattcccgaa cacgcctttc agacgatcag ataaaggaca atgcagcttt cctgctgacc     180
gatatgctct ccggagaaac agcatcggct gtctcaccca atacgccccc tacccgctac     240
atcttcggcc tacggctatg ccctgcatcg cttccgtccg ctttagacgg atcagccaat     300
tctcctatag ctctttcaac gggtgcaaaa aacaaacgag ggttatcgaa aagaatgaaa     360
catcctcgtt cttataaaga gaatcgtatg cttttgaagc atatgatcag taggaatttt     420
agttnttcca aaatctgaaa att                                            443
```


(2) INFORMATION FOR SEQ ID NO:920

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 952 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...952

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:920

```
gcttgggcgc agtggacttt acggtggcgc tgcactacgt attcgatacc cctacgaccg      60
tatcgtctgg gacgtgggac atcaggctta cagccataga tcctgaccgg ccggcgcgaa     120
gacttccgcc atttgcgcca atggggggca tcagcggttt cccctcgcct aaagaaagcg     180
aatacgacac attcccgccg gacatgcttc caactctatc tccgcagcac ttggaatggc     240
tgtggttcgg ctgccaagga tgagaaacgg aaggtcatag ccgtcattgg agacgttcca     300
tgacgggagg tatggctttt gaagggctga acaatgcatc gtcttcccga acaatctgct     360
gatcatcctc aatgacaaca acatgtccat cgcaggaatg tcggaggact gaaccgctat     420
atggtggaca tcctcactag cagacgtata atacgattcg ttacgacctt tataagggct     480
tgcgaaaaat aatctgatca gcgagacgaa cagaaaaaat ctcctgcgct tcaacaacac     540
ttcaaggcac tactggcacg cgagagcaat ttattcgaag gattcagctc cgttatttcg     600
```

```
gccccgtcga tggcaataat gtgctccgct tggtggagta ctcaatcaga tcaaggatat    660
ggccgggcct aagatcctgc acctgcaacg atcaaaggta agggctactc tccggccgag    720
aagcaggcta cgatcggcat gcgccgggcg aattcgacat caaatcggga gaacgtaaga    780
aagggagaac aagcccgagc cacccaagtt tcaggatgtg ttcgggcata caccgtggag    840
ctggcggaca gagacgagcg tgtcgtcggg gtcaccccgg cttgccgaca ggttgctcca    900
tgaccttcct gatgaagaaa tacccgaata ggcctatgac gtgggtattg cc            952
```

(2) INFORMATION FOR SEQ ID NO:921

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 445 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...445

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:921

```
gacgggtata aacttcgatg ctcttcccga atgtccgttc gtccatggcc ctgcttcaat     60
ggcagccaga gcgacttccc atgctcccgt catttcgggt cggcgatctt tcgtccggcg    120
accagtttat agacggaaag accttttcgg tcgggataag catcttcttc tcccggcgga    180
tatattctcg caggataatg nctcgatgat ggccgcacgt gtggcaggcg taccgatgcc    240
gcaacggcga gggctttgcg ggcttcttcg tccgcaactt cccgtccggc ggtgtccatg    300
gcncgacagc aacatggctt cccgtataaa ggggctttgg gcttgtttga tngntccngn    360
catttcgaaa tccgaaaaca tcgagccggg ncgcctttcc ttgccattcc gggaaagctg    420
tccacaacgg gtttcttcct tnttc                                         445
```

(2) INFORMATION FOR SEQ ID NO:922

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1048 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1048

```
cccctcgcgt atataccgag atactggaca aatgagacac tgtgcaacac aatagacagt    60
acaaacaaa aatatggcga aatgacagcg agcaaatcc aataaaaaaa gtgtgtgagc    120
attgcaaaca ggagtttata gctttgagac gactaccaag tattgctcac atagatgtaa    180
tagcagagcc tacaaactca aaaaagagaa gagagggtac gcagaacaga actttctgaa    240
caagaaaaaa ggtcagtgat attatagaca aaccttatct ctccatctca gaagtgggcg    300
attacttggt attagtaggc atacaatata tagatatatc taccagggaa cttaaaggct    360
tataatttga gttctcaacg ctcaatcgtc aacgtgaaga cattgaacgg atgttggcag    420
agcgacctta tgagaaacga cgcccagaga tgcaatcgta attacggaac tatatacgac    480
agacgaggtg gcgatatcca caacatatct cgatcttctc tttttgcaat agccaagcgg    540
agaatatccc tcgaacttat aacagaggca agacctattg gagcaaacgc atatagatgc    600
ctattttgct aaacaggctc ctgcttctca tatcgaaaat ggtgtacagc cgtggagata    660
caagaaagat tcgatatgac gctcacgccg tttacaactt catctctgat cacaacatcc    720
ccagaaagaa agtcagggta aaagctacta ttccaccaaa catgtcgaag cagctaaagg    780
agtgttgata aggcagctcc aagctactat actgttcggg aggctatgga aaatttggtc    840
ttactcgtga ccagctctat caatatacca aacgttataa tgtcctaaac taaagcaagg    900
tcggaatgtc ctcatttctc agcaagaatt gatgaagtcc tcaaacctcc cagcatcact    960
cgataagtta tttgttggtg tatgggacac cctcttatca ccttattctt ttgcaactga   1020
atcaataaaa taaccctcta atcaacgg                                      1048
```

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:923

```
cttaaagaga ccacggtttc ttttcggaca taaaaaagaa ggcgatccaa acatctgttc    60
tagctcgccc tctctattaa agttatttat atccgatgag cgacttattc ttctgctgct    120
ttaggagttt cttctgcagg agctgctcta ctacaacgtc tgcgctttta cgcttacgag    180
aacggcgtgt tttggtgcct tcttcgctgc ttcgccaagc atattctcat tgtagtcaac    240
aagctaataa agcacatagc agcattatct cccagacgat aaccggtctt caagtacggg    300
tatatccacc gggacgatct gcaatcttag cagcaacatc tccaaaagtc cttcaggcat    360
attatctgta gtaagagagg cgatcgcgag aggcgt                             396
```

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
     (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
     (A) NAME/KEY: misc_feature
     (B) LOCATION 1...897

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:924

```
tccngctgtc tcgctctcct tcggggcctg ttcttggctt ggttacttgc ataggcgtac    60
tgctgattcg tttcggtatt cgcctccgtt ccctcctggt cttatttgcg gtgccgaacg   120
ggcggagata gagggtgtac ccgtttattt gctcctcgtg taaggatgcc gttcagcttc   180
tgtaggcgta tttatctccg accgatctgc gctcataccc ttctgtgaga aatgttctta   240
tccataacaa gaacataccc gagcaacgca ctttgtcgat cttttgatcg ccgagtggca   300
tgcatgctgt tttggttcaa tccgtttgct tgggctttga agccgatatg cagcgcaatt   360
tggagttttt ggccgatcgg gctgtgctcc tcgaggcgtg agcagacgcg aatatcaata   420
tgaattgttg ggatttacgc tgaggtcgcg gccggacctc tgtgtagttc ttacaatata   480
aacgacttaa agaaagaatc agaatgatga acaaaacgaa atccaatcgt gcggccggac   540
caggtatctt gtcgcactcc cgttggctgc ccttatgctt ctgagcggaa atggctgtgg   600
gcgggcaatg ccgtatccga agtccgggaa gtagtagaac cgttgcgagc gatcccgccc   660
ccttgtctga tgctcctgac atctcctgca gcaggacgag gatcctgtgt gttccgagct   720
agatactcca ccatcttccc cggggggaatg tccgaactga tgcactttct gagcaagaat   780
ttaagtatcc ggaacaatct gcaaagaaca gcatccaagg tcgagttgtg gtccgtttat   840
tgtcgaaaaa gacggcagac tgactaacat acaagtggaa aaagcgtagc acccgaa      897
```

(2) INFORMATION FOR SEQ ID NO:925

     (i) SEQUENCE CHARACTERISTICS:
         (A) LENGTH: 374 base pairs
         (B) TYPE: nucleic acid
         (C) STRANDEDNESS: double
         (D) TOPOLOGY: circular

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: UNKNOWN

(vi) ORIGINAL SOURCE:
     (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

(ix) FEATURE:
     (A) NAME/KEY: misc_feature
     (B) LOCATION 1...374

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:925

```
tggctgaatt ccatgtatcg agactccctg tcagatagcc ggtgatgcgc gcaagcgagc    60
tatccgatcg ctgccgcata caggacattt gtcgtagaca cacctttgaa gccacagccc   120
ttacaggtat ccacaggatg attaatcaac catagccgat gttttcatcc ttcatcatct   180
tgacaatttt gaggataccg atacattctt cttagcttcg ccatccaact ccacataagt   240
aatatgccac cgccggtaat agcatggaaa ggagcctcgc acttgatctt ttcactatac   300
ctatcgattc gcgaacatcc acatggaaag aattgacgta ataatgcaaa atccgttacc   360
ccggggataa tccc                                                     374
```

(2) INFORMATION FOR SEQ ID NO:926

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 626 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...626

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:926

```
tattcatcca gataatagct cggataattg cggttgcatc cctgcacatt tccttgtgtt      60
cgggaacatt ccctgattcg tagtcttcgt cttcgacagg atgagacgat tctcgtaagc     120
gaaattatgg gttgccataa ctgtttatgt tttgtcaggg ttagaaaatg tttctctatg     180
gctgcattca gcagtgatca tcgtcgtatt cgtcctgaga gaggctgatg ctttccgcat     240
ctttgcatag cagctttctg cgacataatt ttcccaactg tacaggcgta cataccgttt     300
cccttattca ccgaaaccac aggcacggtc ttaaatccga catgcacaac agcagttcgg     360
tcaattcaca ggcacgattt ccgtattcgc ttccacgata agaatggaca cgtccgaacc     420
cgtttttatg cggtaatgcg agaggagtta tttcgtttcc tgcgatccat tgagtgattt     480
aatctttctt ttccataatg ctgacatttt ttttgcgtct aaagctcgga gtgtgccgat     540
tcgtttcgtg ggctgttcaa ggtggccgga gggtatatgt caaggcttcc gaaaaaatac     600
gacttggaac gaaagtggaa atgtgg                                         626
```

(2) INFORMATION FOR SEQ ID NO:927

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 497 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...497

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:927

```
tgagacaaaa acggattgcc gaatgtattg gtgacctgaa gggctgctcc aatagcatgg      60
```

```
caaagaggaa gaagatagcc atacgacgtt ggcggaaagg acaaaagcat ccagccccaa    120
gacggcaagc accccccttct tcttgtttct tttgcaggag ggcagtgagg caaggtaaaa    180
gcatacaatc ccaatgaagg gaagccaccg cactgacata gaattgcata ctgctcatta    240
cccatcgcat atatcgacgg tccacatggc caaaatgaag ccgacagtac cccaacgcgt    300
ataggaggaa attcgcgcac tatatccata ccggctttct ccaagcagta taggctatcg    360
aattggtgag agctagggta ggcatatagc tctgcagagc aggagcataa cgggataaaa    420
aacggagtaa ctactcagcg tgaagcataa ccagcaatat ggctccgatc agatggcacg    480
ctcccaagag tttgtgc                                                   497
```

(2) INFORMATION FOR SEQ ID NO:928

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 484 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...484

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:928

```
acttcatcgc cgtagcatag gactcctttc cctcttcctc gccacttta tcttggcgaa     60
gacgaaagga tcgtaggcat agcgaaaggc ctgggtgaca tcaccatgat gatggccagc    120
ttgtagcacg cgccatagat accgagcgtg ctttcccctc cgccggatcg tcgaaaagca    180
tgggaaagag aatctttcgg cctgattgtt gaagctgccg gccaagccca acagcagaat    240
agggaagaat aggccagcat cttgcgcaga acgtccggac gaaatacgcg gccgcatgcc    300
gccaatgagg aaaaagcatg accatctgca cgaggntgca aataagttga tgacgaacac    360
gtaccccaat tcgtagttcg ggcggtagaa gcatcgatcc actccggatg taaggcataa    420
ataccgggga cacagggang agaaaaagat cgtaggacn atgggtcanc aggattgaat    480
gtca                                                                 484
```

(2) INFORMATION FOR SEQ ID NO:929

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 964 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:

(A) NAME/KEY: misc_feature
        (B) LOCATION 1...964

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:929

gggtctggaa cgtctcacct cgttagcgga gctttatctt ttggataaca aatccgtaag   60
ctggagggtc tggaacgtct cacgtcctta gcaacgctga actatcgggt aaccaaatcc   120
gtaagctgga gggtctggaa cgtctcagtc cttagcaacg cttgaactat cgggtaacca   180
aatccgtaaa ctagaggtct ggaacgtctc acttcgttaa caaagcttcg tctaagaagt   240
aaccaatcag taaactagag ggcctggata gtctcacctc gctaacaaaa cttttctctc   300
cgataaccaa atcagtaagc tagagggtct ggaacgtctc acccgttagc ggagctttat   360
cttttggata accaaatcag taaactagag ggctggaacg tctcacgtcc ttagcaacgc   420
ttgaactatc gggtaaccaa accgtaagct ggagggtctg gaacgtctca cgtccttagc   480
aacgcttgaa tatcgggtaa ccaaatccgt aagctagagg gtctggaacg tctcacttct   540
taacaaagct tcgtctaaga agtaaccaaa tcagtaagct agagggtcgg aacgtctcac   600
gtccttagca acgcttgaac tatcgggtaa ccaaatcgta agctggaggg tctggaacgt   660
ctcacgtcct tagcaacgct tgaacttcgg gtaaccaaat cagtaagcta gagggtctgg   720
aacgtctctc ttcgtaacaa agcttcgtct aagaagtaac cagatcagta aactagaggg   780
cctgaacgtc tcacctcgct aacaaaactt tctctctccg ataaccaaat cagaagctag   840
agggtctgga acgtctcacc tcgttagcgg agctttatct ttggataacc aaatccgtaa   900
gcctggaggg cctggaacgg tcttacctng tacaaagctt cgtctaagaa gtacccaaa   960
                                                                       964
tcag

    (2) INFORMATION FOR SEQ ID NO:930

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 136 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

      (iii) HYPOTHETICAL: NO

       (iv) ANTI-SENSE: UNKNOWN

       (vi) ORIGINAL SOURCE:
            (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

       (ix) FEATURE:
            (A) NAME/KEY: misc_feature
            (B) LOCATION 1...136

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:930

tgtgcagaca cttttaagat aggtctgtaa ttgtctcaga gtatgaatcg tcgcccgact   60
tccttaaaag gaggtcgggc gacttcgttt ttattattct gtccggtaaa cttgtcaaga   120
ggagacctttt gaaaaa   136

    (2) INFORMATION FOR SEQ ID NO:931

        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 484 base pairs
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: double
            (D) TOPOLOGY: circular

       (ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...484

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:931

```
gaattcttcc ttttttaata ttataaacaa ccagttcctg tttggctgtg tatctttttc    60
cttatcaatc tcagaccaaa gaatatattt aaactgctgg catctctgtt tcttgataat   120
tcagtaaaaa taggtttgtg atattcgtac tatctaaaaa agatttatat atctcatatg   180
cagtacatgt cttaccaatc cagctgctgc ttctacaaca acaagatgtg caccttttct   240
attgatgttt ctttgattac agaaatgata tcagaagtcc catttatagc atctctgcat   300
cttctttgta aatagagtaa ggcatactga tgtactggta cttatgtcac tgccgcaata   360
atgctttact tgattagtgg gcaaattctg tgatctccta ttaatggcat ttgcagtggt   420
ttgtggtgtt aaaaaaaacc ttaaacaaat aacctctctg cttcttcnat aggatctgga   480
acct                                                                 484
```


    (2) INFORMATION FOR SEQ ID NO:932

        (i) SEQUENCE CHARACTERISTICS:
             (A) LENGTH: 1058 base pairs
             (B) TYPE: nucleic acid
             (C) STRANDEDNESS: double
             (D) TOPOLOGY: circular

        (ii) MOLECULE TYPE: DNA (genomic)

        (iii) HYPOTHETICAL: NO

        (iv) ANTI-SENSE: UNKNOWN

        (vi) ORIGINAL SOURCE:
             (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

        (ix) FEATURE:
             (A) NAME/KEY: misc_feature
             (B) LOCATION 1...1058

        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:932

```
ggtaaccttg attccatcgc atgggatcgt tggcaaaatg accgttatca tcagagcatg    60
tacttcagcc ggtacgccct cggtacgtaa tatctcttat tgagctgagc ttttccggaa   120
agtatcaggc ctatttcctg atcgtaattt gtagccacat gcgaagattg tccggcatac   180
tgtccatgtc gaaacgccaa tgggtgaata ggctaaaatt gtcggtattc tgtcatctgc   240
tgctaaagag catagccctc attatttcca cgattagcta cataaaaata tgcagagagc   300
cttcctcttg tgatgtgata cccctctcag catctccttg ccgtaaacgt aatcgatgga   360
aatcttgtca gatactgctg tttgtcccat tccaaggata cctgtcgcaa agccagccga   420
gccagactca aagctcgctc ttcgtaaccg gagcagaatg tccctgcatg gcaatgccaa   480
agagcattac atggctaaaa gaaaactttt tttcattgaa ggtgatattc cgaattatgg   540
agtttttgct gtggtcgccc tatggggcat tgtagaattt gctgcattta caaaagtgtt   600
tctgatgatg tagtattagg atcaggcaat ctgaatgaaa aagccggaat ttatattctt   660
tccaatcctg ccatttttaa gagctgaacg gctgcttccg tgcctttgtt gccatgcttg   720
cccccggcac gctctcggcc tgaagcattg tttccgtggt aaggactccg aaaatgactg   780
gtacaagccg tcaatgttca actgggtgat tccctgtgtt accccttggc agaatagtcg   840
aagtgggggg tgtcgcctct gactacacag ccgatagcga tcctgcatct acttcatgct   900
```

```
gttcggcaag gtatgcgctt gcataggtaa gtcgaaagtg ccgggaacat gctgtacgat        960
gatattgtca gccgacacac atgctccaaa agggtatcga tagccccttt catcagtggc       1020
tctgtgatat gtgattcctt tcagcaacgg caattcct                               1058
```

(2) INFORMATION FOR SEQ ID NO:933

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 1666 base pairs
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: double
          (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1666

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:933

```
tagggaatat ttatttttg aaggaaatta tgaatgtgta attaaaatga tcctcaactg         60
gttgatttgc tatcaaaaac actcccccaa caaaacatgg gtatttgggc aacagcgaag        120
gttgggttac actttacctt gaagaaagtc atgaatacaa atcattatta tatccgatat        180
ggatgtgcaa taactcgtat gataatcatg tatcagagag ggaaaggcta actccaaaag        240
aattggattc agcattgaaa aagcggtttc ctcttttagg atccaagccc aggacctttt        300
tccccaggat caaaggcccg tttctctttt gtcaaaagaa aagtgggaaac acaaagaacg       360
gaatatttct ctccccacat attgtcacga aaacatgcac gcccaaaaag tttggacaaa        420
agcatctaaa tttcttgaaa tgactattta ggcaaagaca atgaacgaga aggcttactc        480
aaaaaagaca tgtgagcatg tctaatatcc cgatatccgg agaatadctg acttttggca        540
aaaagatact gggcgaggct ctgcaaaaat atctgttgaa gaacaaacta tggacttatt        600
actacactaa cgcccttaaa gcctgcattg caagtcggaa agataatttt tgcatcattc        660
ctgatatccc actcaatcaa atggtcattt catagctctc tttgacaaaa tgcaaatcac        720
tcatttatca ggagagcaat gttaggaaac atagataata aaggaattcc tcatcgtcca        780
aaaactttcg agggaatttc cctaattcac ccaaaagtga cagaatggga gcattgcgtt       840
gttaggggct ataggagaat ttgccaagca tgcagaattt tcactcttgc tcaaaaggtg        900
ctagattcat tgaaaggatc aaccttgtat cgattacata cggcaatgca attccattta        960
cgtttcatca ttatataata atctagcaaa agaggggaaa ctacactcta tagtggatag       1020
cttatttaa agtcggctct ataaaaaaga aaaagagtt tatggggata ccgattatac        1080
cgatttgact ttttcaccaa tcgttttta caatcattca ataaggcgct ttcgatgact        1140
tttttagctc cagagtagaa tatccaaatc aaatcaaata ttatttcaaa tgttttttac      1200
caaaatggag aaattaaaaa ctgacttatt gcatctgccc agatattggg ttagttgggc       1260
tcaaccaagt tgcaatttttg cagcaaaaga agaagccgat tcatgaatct ctccaggaaa      1320
tattttgaag aaaaagctaa atttttagtg atgatggaga gcagtattta tgagcaaagc      1380
gaggagatgc tctcattgct caaatcctca ttttagcagg agattatcaa agaatgaagc      1440
tccaaaagag gcattgcttt tcatggagaa accattaccg gagaaataga tttgtctgtt      1500
gcaaagaatc ttctaattga tacatgcgta ttctgcagag aatgagaaac aacgagattt      1560
gaacagcgta aaaacgatga cgcattacca tctgatataa acattgatga cttaacaaca     1620
cataatactt catatatgga aacaaaaaaa ttgcaggagt tttggt                     1666
```

(2) INFORMATION FOR SEQ ID NO:934

      (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: 510 base pairs

```
              (B) TYPE: nucleic acid
              (C) STRANDEDNESS: double
              (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
              (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION 1...510

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:934

gggttgcatc gtaattacgg gcacaagcat ctcttcgagc gatatgcctc gtgctggaat      60
gtattgcgat agtattgtac gtagtagttg tagttattgg gtaggcgaag aagtcatcct     120
ctttcgtgaa gatgaatttg tccgagagtt gttatggggc agccctacac ttgcaggatc     180
tttgatctcg aatactcttt cgggttgtag tcgaggttct tacctatttt gtatctgagg     240
ttggtttggt acttctgtct ccgatcactt tgacgggatt cttcacctga atagaccatg     300
gtcagtggtc aataccactt tataacccat ttcggcaatg ctgggaagag attgtaggta     360
gtcgaatgct tgaaccagct tcttcgtcag cggcgatagg ctgcttcgtt ggatgccagc     420
tctcgaatca tcttgctatc agtacgagca tgcgacatca tgtccaccga aagttcagga     480
ctatcacatt agttgggttc tgcgacagtg                                      510


(2) INFORMATION FOR SEQ ID NO:935

          (i) SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 549 base pairs
              (B) TYPE: nucleic acid
              (C) STRANDEDNESS: double
              (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
              (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
              (A) NAME/KEY: misc_feature
              (B) LOCATION 1...549

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:935

acggcatcaa acaaatcgag ctacaggtcg attctcggga ctcacgtcca ccggtgccat      60
gattactctg gaagatggga caaagatcgt tacaaaaaca ccggtatcag tcgcacgaaa     120
gcttctcccg gcctgttccg actcatgaga aagactatcc gggcgtagaa gttgtcgatc     180
tccgataata aaaaccatct tagtccgttt cctctttgat agaaagaggt tattaacgaa     240
caacgaaaac tatgaaccaa acaacgaaaa cactgtcgat cattcttatc ggtagctgac     300
cttccttgtc ggggcaagcg caaaactcaa cgccccccct tgtgggaccg tgctggagga     360
ggtacctttc tcccgaagaa atcaaccttt tcgcagacaa cgtcagccct tctttcaaag     420
cctatattga attggcattc accgaaggaa accaaagcca tgctcaccat tccgaaatag     480
aagggatggg gaccaaaacc ggcagaatcg aaagaaggaa atcgactacc gaatgcaacg     540
```

gtgacgatg

(2) INFORMATION FOR SEQ ID NO:936

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1631 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...1631

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:936

```
aaggacgaac cagatcacca aaccggaaga tttccgatca ctactggcgt atcggatgcc    60
tatttctatc gaaagccttt ctgaagacta tcgggagcga acgaatcgat agcctccctc   120
attcgcacct caggcagagg ataagctccg ggccactgta tcttagcagc tacctccacg   180
gtttttctct gaaaggatgg agtggagtta ttttattatt ctgcgtttta tcatcccttt   240
tgtgtctttt gcccacgata ctaaagagtt atagattaga aataaaaaga cttagcttaa   300
cgttgtaagt aagactatcg atctgggaga tggtcgttcc atcagatcga aaccggtaaa   360
ttggccaagc aggccgatgg cgccgtgaca gtaccatggg caatacggta ttgctcgcta   420
cagtttgtgc agccaaagac gtaaccccgg ctgcgacttc atgcctcttc aggtggaata   480
caaagagaaa actccgccat cggacgcttc cccggaggat tcactcgccg cgaaggcaag   540
cttcggatta cgagatcctg acctgccgcc ttgtggatcg tgcccttctc cgctattccc   600
ggacaattat catgcagagg tattcgtcaa tgtgatctct tttcagccga tggcgaggat   660
atgcccgacg ccttggccgg tctggcgctt cggcggctct tgccgtttcc gatataccgt   720
tcaacggccc tatcacgaag tgcgcgtagc acgtgtggac ggccgctata tcgtcaatcc   780
tacttcgagc agctcgaacg cgcagacatc gacttgatgg tcggagccac aatgacaaca   840
tcatgatggt cgaaggtgaa atggacgagg tacaggaatc cgaatgctcg aaggcatacg   900
cgtggcacac gaagccatca aggtacagtg caggcgcagc tcgaactatc cgaagctgta   960
ggaaaacttc aaaagcgtga tacagccatg aagtaaacga tgaagacctg cgcaagaaag  1020
tgcacgacga tgctatgctc gtgcctatga ggtggctacc agcggaaccg gcaaacacag  1080
cgcggcgaag cttttgaaaa gatcgtggaa gagttcaaag ctcaataacg aagaagaac   1140
ttgccgagaa ggccgaaatg atagctcgct actacccgat gtggaaaaag aagcgatgcg  1200
tcgtgccatc ctcgacgaag gcaaagcctc gatgggcgta agaccacgga gatccgtccg  1260
atatggatcg agacgactgc ctacccggcc cgcatggctc agctatattc actcgtggtg  1320
agagcagtcg cttacgaccg ttacgcttgg tacgaagagc gacgaaaagc tctggacgat  1380
gtactcaatt atacgaaaga gcgattcctg ctgcactaca attccctcct ttctctacag  1440
gtgaagcccg tccccaacgc ggtgtaggcc ccgcgagatc ggtcatggca atttggcgca  1500
tcgcgccctc aagcgtatgt accgacggac taccctatg tggtacgtgt aatcagcgac  1560
attctggatc caatgggctc gtccttcgat ggccactggt ctgcgccggt acttttgctc  1620
                                                                   1631
tgcgccgatg c
```

(2) INFORMATION FOR SEQ ID NO:937

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1191 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double

(D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...1191

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:937

```
tcatgtccaa ttcagaaaaa aagtgtcggc ttcggaaaag tcgggcaatc acggcgtgtc     60
agatagattt tgtccgtgta ggncagcatc tgctcataac ttgtgctccg ccgatgacaa    120
aggcntctgc ctctttcgcc caccagccca atgccacttc gggcgaagct tgccccattc    180
gggctcccgg aaaatctgct gcatcctgct taggacgata ttgcgtctgt tcggcaaagc    240
accttgggca gggagcggaa tgtgcggcta cccatgataa tgctatgccc tgtgtcattt    300
ccttgaatcg tttgagatcg gccggcagat gccagaggag gtctttttgt atccgatagc    360
cccattctcg gctatggcaa caacgattga aacatattgg ataggtgagg aaaaactgaa    420
tatcggtgga aaacattccg tagactgcta caacgcccgc aatgtgcgga tgcggatcat    480
acccttcgag cggaagtctt cgtatcggaa gtcgaagaga tcggacacct ccggattcat    540
accattcggg gcaacgctct cggctcacga ctcagttgta gctgtaccgt tcgaggtggt    600
taagatagat atgggcgtcg cccagtgtat gtacgaacgc ccgggtttca gccctgtgac    660
atgagcgatc atttgtagca ggagtgatac gaagctatgt tgaacggtat gcccagaaaa    720
gaatcggcac tgcgcgatag agttgcaggc tcagccggcc gtcagcgaca tagaactgca    780
tgaacagtgg catggaggca gatgcatatc ggcaagctgg cctacattcc acggcatacg    840
ataatgcgcc ggctgtccgg ttcttcgcgc agctggcgca gccctcctgc atttggtcta    900
tatgccctcc ccgatagtcc ggccaactgc gcactggtag ccatatatag gtcccaaatc     960
gccgttctca tcagcccatt gttccaaatg cgtacgccat gttcctgcag gtaatgcacg   1020
ttcgtgtcac tctgaggaac caaagcagtt cgtatataat ggacttcaag tgcaatcgtt   1080
ggtcgtaagc aagggaaatc cctcttcaag gtcaaagcac atctgatgcc gaatacgctg   1140
atcgtacccg tacccgtgcg gtcttctttt cgtactcctc gtcgaggatg c            1191
```

(2) INFORMATION FOR SEQ ID NO:938

          (i) SEQUENCE CHARACTERISTICS:
              (A) LENGTH: 445 base pairs
              (B) TYPE: nucleic acid
              (C) STRANDEDNESS: double
              (D) TOPOLOGY: circular

     (ii) MOLECULE TYPE: DNA (genomic)

     (iii) HYPOTHETICAL: NO

     (iv) ANTI-SENSE: UNKNOWN

     (vi) ORIGINAL SOURCE:
          (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

     (ix) FEATURE:
          (A) NAME/KEY: misc_feature
          (B) LOCATION 1...445

     (xi) SEQUENCE DESCRIPTION: SEQ ID NO:938

```
tatcggacat cctcaatatc acggccatgg ccgtactgga cagccacgct gtctgatttg      60
attcaggtat aaatccgtac aacaaataga ggctgtttac tgcagaaacg agcctctatt     120
tttcccttgc agctataaga aagcctacgg aagatgctaa ggctaaaaag caaagaggct     180
gctccgcacg atttgcgagc agcctctttg tatttggggt ttctatcttt cggaaaagtt     240
cccgaaagtc gccttttatt gtccttaaat ccgatggact gactttactc ggtagacatt     300
ctgcccgctt gagtccgccg gcggttctgc cggcttccaa gagggcaggt tggcttccgt     360
cggaatgtag atcacggtct tgtcattcag gcgccctgct tgacgccacc catagatact     420
                                                                      445
gaatgtattg tgggcgtaaa gcttg
```

(2) INFORMATION FOR SEQ ID NO:939

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 537 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...537

   (xi) SEQUENCE DESCRIPTION: SEQ ID NO:939

```
gctcaagatg cttgccatga gcggtgagga cggaggaatc aagagtctgt caatctcaac      60
atcgtaccgc tctctttgag ctatgagtat dacccctgga ttacctgaaa gcgcgcgaga     120
tgctcagcaa gcagcgcgac ccgttattaa gaaacccgtc ggggaggatc tgctgaatat     180
gcagacaggt attttcgcta caaaggacgt gttcactttg ccataggtac acccctaaga     240
gaattgccga gagcatcccg gcagatgcgc cgcatgcccg gcagttcaca gaggaggcaa     300
actgatcgat gcagaaatcc atcgtcgcta ccgtctctat ccggcaatta tgtagcatgg     360
gatcttctgg acggatgcga ccacgccggt tccattatag caaggaggaa aaagagacct     420
ttgtaaacta tctgtccgca caatcggcaa agtggagatg caggataagg atgaagagga     480
attgaaacga tggattctga tcatgtatgc caatccggca aagggcatat tatgctg        537
```
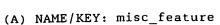
(2) INFORMATION FOR SEQ ID NO:940

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 492 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

   (ii) MOLECULE TYPE: DNA (genomic)

  (iii) HYPOTHETICAL: NO

   (iv) ANTI-SENSE: UNKNOWN

   (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

   (ix) FEATURE:

(A) NAME/KEY: misc_feature
        (B) LOCATION 1...492

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:940

ggaagggtta ttgtgtaacg gtctaatgaa aacgaaaaga ttattgccgg agagttgtgc   60
aacggaaaag ccatgaatcc gatagtcggg attcatggtt ttccgttaga gtgagggaga   120
ttgttgtcag cttagcaatt cctttacatc gtactgatga ggctgccatc tgctttgcct   180
gccaattctt tggtggtact cccattactt tgcccatcat tttactgtca gtgacgccga   240
gacggtgatt atttcctgta agatgggggt cagttcctca cgtgagagtt gtttggtagg   300
taggcctcga ttacctcggc ttcggcaaag ctcaggttcg gccgttcggg tctgccgttt   360
tctacaaaga tggcagcact ctcgcggcgc tgttcaccat cttttgcatg atcttgaggg   420
ctgcatcttc ngacagagtg catcgctgcc tttagctgtc ttggcttcga gaaattcttt   480
cttcactccg ga   492

(2) INFORMATION FOR SEQ ID NO:941

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 2202 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

    (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...2202

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:941

tgcgaaagga agatcgagac aatctttctg catgaacgta atccgattgc caaattctcc   60
gaacgtgctt tctgctcccc tatcctcatc atttccaaga aagatcgaca cccgtcacct   120
gcttgactga agggatatgc ctgcatattc gatggctaaa tcacccgttc cggtagccac   180
atccagcact gtatgtgagc gaaaggctcg atcatacgga tagccttctg ccgccataca   240
cgatcattcc ccatgaaaag aggtgattga gacgatcgta atgtccggcg atatattgaa   300
catggcctct acctgttcat tcttggggca ttcggtgtca taggggttat tctttcagga   360
ctttgcatgg cacatgattg ttcgacagtc agcgactgct aacgcagata ctccgttatg   420
ttcttttcta ttctttctgc cgattgctca ggtctgcctt ttcgaagggc ttacctacca   480
ctcgctcgta aattctatgt accgctccga cacactgtcg cagtatgctt ccgtcatttc   540
ggtatttgct ggccgggctt gccctggaaa ccgttctcga tcagccacga cgaacaaact   600
ccttggataa ctgcttctgg gcttcgcccc gttcgaacgc tcctgatagc cctcggcata   660
gaagtagcga gaagagtccg gcgtattatc tcgtcgatca ggtagatctt accgtccttc   720
ttgccgaatt cgtattggta tccaccaaaa taagcccctt ttcagcagcc atttgagtac   780
cgcgtcgaaa agtgcgtaag tatagcgttc tatctgctcg tagtcctctt tcgcaccagt   840
ccctgagcaa tgatttcctg acgagagata ttctcatcgt gacctcatcg gccttggtcg   900
taggggtgat aatgggatgt tcgaaacgct gttttcgcgc atgccctcgg gaagaggcag   960
accgcaaagc actcgctcgc ggcagcatag gcacgccatg cacttcctgt gatgtagccg   1020
cggatgacct ctcgaccttg aacggttcgc aacggtgtcc gatagtaacc atcgggtcgg   1080
cgtagctatc ttccagttcg gaactatatc gcgagtggca tcgaggtgtg tgccgctatc   1140
tgattgagta cctgaccctt gtaagggata ccggccgaag gactacgtcg aaagccgata   1200
tgcgatccgt ggctatcatg accagagatc attctccaac gtgtatacgt cgcgcacctt   1260
gccgtgatat acggtttctg tcccggcagt ctgaagtcgg tacgagctaa tgtttctttc   1320
atctgaattg tatgctaagt gattcgtaat aatatcgata tcgcctgatt cttatggttt   1380

```
gcgcaacgac agctgcggct tcggcctcct ttttccgttc gcatcgtacc ggtcgtaggc    1440
atccaccaca cgctgtacga gcggatggcg actatatcag cgcgttggaa tgcaatatag    1500
cctatccctc tcgttccttg aggatattca gagcctgacg cagaccggag tgcacacctc    1560
tgggaagacg gtctgcgtaa tgtcgccggt gacgatcatc ttggcattgg caccaagcgg    1620
gtcaggaaca ttttcatctg caactcggtc gtattctgag cttcgtcaga atgaccacgg    1680
catcgttgag cgtacgtcct ctcatatagg ccaatgtgct atctggatga tgttgttttc    1740
gatgtactct tttagcttca cggcgggatc atctcctcca gcgcatcata cagaggctgc    1800
aagtagggat cgacttatct ttcatctcac cgggcagaaa tcccagcttc tcgccggctt    1860
cccggcagga cgtgagagaa tgatacggcg cacctgcttg cttttcaagg ccggacagcc    1920
agactgatgg ctacgaaggt cttgcccgtt ccggcagggc gatggcaaaa acgaggtcat    1980
tggcctcgaa agcctccaca agtttctgcg attatcacct ctggcaatga tgctcttgcc    2040
tcccgttcca tgcaggatag atgtttaggg acatcgtcag cgggcagctt ggcaccctgt    2100
gcaatgccag gatcacatct tcgggcagga ggttgtactc acggcaatac gccacctcgg    2160
ctccagaact tccaggaaac gatccgtctc gcgcgaatcg cc                       2202
```

(2) INFORMATION FOR SEQ ID NO:942

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 784 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular

    (ii) MOLECULE TYPE: DNA (genomic)

   (iii) HYPOTHETICAL: NO

    (iv) ANTI-SENSE: UNKNOWN

    (vi) ORIGINAL SOURCE:
        (A) ORGANISM: PORYPHYROMONAS GINGIVALIS

    (ix) FEATURE:
        (A) NAME/KEY: misc_feature
        (B) LOCATION 1...784

    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:942

```
gcaaaccgat aatagaaata gatatgcgag catattacga actgaagcgc gtcgagacgc      60
atgcgataag gaagcagaac gataccagaa ggacatcttc gctgtttgga tcatgtacgc     120
aacaattatg gcgacatgat tttcgaaaag ttgagaccca tctgatctat cctggcagcc     180
ttggcaataa gatactcgct tcctcatcgg caagaagcag atctcttcat ccaagctaat     240
gactcgacag gccggccgac tctccatctg atcgagcagc ttaccgactt cggcgtcctt     300
tgctgatcag tgccttgctt ggctttgtta agcgtagcat cgtcgccgtt tccgcaggcg     360
tcgataattt cccctattct gtcttttcgg gtaggaacat tttatgtcag cggctgacaa     420
agcgatataa ttgttgtctg ctgaaacaat tctccatgaa cacaaaagaa tatgtgctgg     480
actttatcaa cgcacgaact gtaacctttt ccttaccggc aatgcgggca caggcaaaag     540
accctgctgc gccatatagt ccaacacaca ttcaaaaact gcatagtacc gctcccaccg     600
gaatagcagc gttgaangcc ggtggggtga cgntgcatcg cttttacagc ttccgccggg     660
aacattcatt ccgtacgggc tatctccgaa agtgcaacgg gcgtaaactt ccctacgcca     720
acttcttttt ggaaaagaca cgtatgcatg cttcgaagcg caaattgctt cgaaacatgg     780
agnt                                                                   784
```

(2) INFORMATION FOR SEQ ID NO:943

    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 1029 base pairs
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: double
        (D) TOPOLOGY: circular
```